



AMERICAN

INEMATOGRAPHER

The Motion Picture CAMERA Magazine

25c

this issue

Polarized Light
Artificial Sunlight for Color
Training Cinematographers in
Russia
Photography of the Month
. . . and other features

August, 1935

Published in Hollywood,
by
American Society of
Cinematographers



Photographed by
GEORGE
FOLSEY



Photographed by
J. VON
STERNEG

SHARING THE • APPLAUSE • WITH DU PONT NEGATIVE



Photographed by
HARRY
FISCHBECK



Photographed by
KARL
STRUSS



Photographed by
RAY
JUNE

DU PONT

REG. U. S. PAT. OFF.

DU PONT FILM MANUFACTURING CORPORATION

35 WEST 45TH STREET
NEW YORK CITY

PLANT . . . PARLIN, N. J.

SMITH & ALLER LTD.

6656 . . SANTA MONICA BLVD.

HOLLYWOOD, CAL.

THE **DU PONT** TRADE MARK HAS NEVER BEEN PLACED ON AN INFERIOR PRODUCT

AMERICAN CINEMATOGRAPHER

A Technical and Educational publication
of motion picture photography.

Published monthly by the
AMERICAN SOCIETY
OF CINEMATOGRAPHERS, INC.
6331 Hollywood Boulevard
Hollywood, California

Telephone GRanite 2135

JOHN ARNOLD, President, A.S.C.
FRED JACKMAN, Treasurer, A.S.C.

Volume 16 AUGUST, 1935 Number 8



What to Read

PHOTOGRAPHIC Possibilities of Polarized
Light, by F. Tuttle and J. W. McForlane.....330

ARTIFICIAL Sunlight for Color Cinematog-
raphy, by Peter Mole.....332

JAMES Wong Howe
by Horry Burdick.....334

TRAINING Cinematographers in Russia
by Stoff Writer.....335

PHOTOGRAPHY of the Month.....336

CHAS. Stumor Dies.....344

Next Month

• From the laboratory standpoint one of Hol-
lywood's leading chemists will tell you some-
thing about release prints and their relation to
the cinematographer. This is an interesting
phase of picture making and one that is seldom
discussed. Much progress has been made in
the Hollywood laboratories as is evidenced by
release prints.

The Staff

EDITOR

Charles J. VerHalen

TECHNICAL EDITOR

Emery Huse, A. S. C.

ASSOCIATES

Walter Blanchard

Karl Hale

CIRCULATION MANAGER

M. E. Fisher

ADVISORY

EDITORIAL BOARD

Victor Milner, A. S. C.

James Van Trees, A. S. C.

Fred Jackman, A. S. C.

Farriot Edouart, A. S. C.

Fred Gage, A. S. C.

Dr. J. S. Watson, Jr., A. S. C.

Dr. L. M. Dieterich, A. S. C.

Dr. L. A. Jones, A. S. C.

Dr. C. E. K. Mees, A. S. C.

Dr. W. B. Rayton, A. S. C.

Dr. Herbert Meyer, A. S. C.

Dr. V. B. Sease, A. S. C.

FOREIGN REPRESENTATIVES

Georges Benoit, 100, Allée Franklin,
Pavillons-sous-Bois, France. Seine. Tele-
phone LeRaincy 13-19.

NEW YORK REPRESENTATIVE

S. R. Cowan, 19 East 47th St., New York
City. Phone Plaza 3-0483.



ESTABLISHED 1918. Advertising Rates on application.
Subscription: U.S. \$2.50 a year; Canada \$3.50 a year;
Foreign \$3.50 a year. Single copies 25c. Foreign
single copies 35c. COPYRIGHT 1935 by American
Society of Cinematographers, Inc.

Neither the American Cinematographer nor
the American Society of Cinematographers
is responsible for statements made by au-
thors. This magazine will not be responsible
for unsolicited manuscripts.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

MEMBERS **

OFFICERS

JOHN ARNOLD	President
VICTOR MILNER	First Vice-President
JAMES VAN TREES	Second Vice-President
CHARLES LANG	Third Vice-President
FRED JACKMAN	Treasurer
FRANK B. GOOD	Secretary

BOARD OF GOVERNORS

Inhn Arnold	Frank Good
Bert Glennon	Fred Jackman
Dan Clark	Ray June
Elmer Dyer	Charles B. Lang, Jr.
Arthur Edson	Victor Milner
George Folsey	Joseph Walker
Alfred Gilks	James Van Trees
	Vernon L. Walker
	Frederick L. Kley, Executive Business Manager

PAST PRESIDENTS

Philip E. Rosen	Hal Mohr
Gaetano Gaudio	Homer Scott
James Van Trees	John F. Seitz
John W. Boyle	Daniel B. Clark
	Fred W. Jackman

HONORARY MEMBERS

Mr. Albert S. Howell
Mr. Edward O. Blackburn
Mr. George A. Mitchell

PUBLIC RELATIONS COMMITTEE

John Arnold
Joseph Ruttenberg, New York City
Charles Bell, St. Paul, Minn.
Charles J. Davis, Washington, D. C.
Georges Benoit, Paris, France
Alvin Wyckoff, Mexico City
John W. Boyle, London, England
Ariel Vargas, Tokyo, Japan
Edwin L. Dyer, Detroit, Mich.
Charles W. Herbert, New York City
Lloyd Knechtel, London, England
John Dorel, Paris, France
Paul Perry, Manila, P. I.
Max B. DuPont, Papeete, Tahiti
Philip M. Chancellor

MEMBERSHIP COMMITTEE

George Folsey	Dan Clark
Alfred Gilks	Robt. Pittack
Bert Longworth	Fred Terzo

ENTERTAINMENT COMMITTEE

Elmer Dyer	Frank B. Good
Charles B. Lang, Jr.	Vernon Walker
	Arthur Edson

WELFARE COMMITTEE

Ray June	James Van Trees
	Fred W. Jackman

GENERAL COUNSEL

Arthur C. Webb

RESEARCH COMMITTEE

Victor Milner, George A. Mitchell, Dr. Herbert Meyer, John Arnold, Farciot Edouart, Emery Huse, Dr. L. M. Dietrich

Directors of Photography

Abel, David
Andersen, Milford A.
Andriot, Lucien
Arnold, John
Ash, Jerome H.
August, Joseph

Barlatier, Andre
Barnes, George S.
†Belli, Chas. E.
†Benoit, Georges
Boyle, Chas. P.
Boyie, John W.
Brodine, Norbert F.
Brown, Jas. S., Jr.
Browne, Fayte M.

Chancellor, Philip
Clark, Don
Clarke, Charles G.
Corby, Francis
Cronjager, Edward
†Crosby, Floyd D.

Daniels, William H.
†Davis, Charles J.
de Grasse, Robert
Depew, Ernest S.
DeVino, Clyde
†Dored, John
Draper, Lauro A.
†Dubray, Joseph A.
†DuPar, E. B.
Dyer, Edwin L.
Dyer, Elmer G.

Eagler, Paul
Edson, Arthur

Fernstrom, Ray
Fischbeck, Harry
Folsey, George J., Jr.
Forbes, Harry W.
Freulich, Henry
†Freund, Karl
Fryer, Richard

Gaudio, Gaetano
Gerstad, Merritt B.
Gilks, Alfred
Glennon, Bert
Good, Frank B.

Haller, Ernest
Halperin, Sol
†Harten, Charles
†Haythorne, Reed N.
†Herbert, Charles W.
Herrmann, John L.
Hickox, Sid
Hickson, John T.
Howe, James Wong
Hunt, Roy

Ivano, Paul

Jackson, Harry
June, Ray

Kershner, Glenn
Kline, Ben
†Knechtel, Lloyd
Kohler, Henry N.
Krasner, Milton
Kull, Adolph E.

Landers, Sam
Lang, Charles B., Jr.
Linden, Edwin G.
Lloyd, Art
Lundin, Walter
Lyons, Chet

MacKenzie, Jack
†MacWilliams, Glenn

†Malkames, Don
Marley, J. Peverell
Marsh, Oliver
Marshall, Chas. A.
Marshall, William C.
Martinelli, Arthur
Marzotati, Harold J.
Mate, Rudolph
McCord, Ted
McGill, Barney
Meahan, Geo. B., Jr.
Mellor, William C.
Mescal, John J.
Miller, Arthur
Miller, Virgil E.
Miner, Victor
Morgan, Ira H.
Musuraca, Nick

Neuman, Harry C.

O'Connell, L. William
Overbaugh, Roy F.

Palmer, Ernest
Peach, Kenneth
Perry, Harry
†Perry, Paul P.
Planck, Robert H.
Polito, Sol

Ragin, David
Rees, William A.
Reynolds, Ben F.
Robinson, George
Rose, Jackson J.
Roshier, Charles
Rossion, Harold
†Ruttenberg, Joseph

Schneiderman, George
Schoenbaum, Charles
Seitz, John F.
Shamroy, Leon
Sharp, Henry
†Shearer, Douglas
Sickner, Wm. A.
Siegler, Allen
†Silver, Jack
Smith, Jack
Smith, Leonard
Snyder, Edward J.
Sparkuhl, Theodor
†Steiner, William, Jr.
Stengler, Mack
Stout, Archie J.
Streng, Walter
Struss, Karl
Stumar, Charles
Stumar, John

Taylor, J. Q.
Tetzlaff, Ted
Thompson, Allen Q.
Thompson, William C.
Tobey, Robert
Todd, Arthur
Toland, Gregg
Tover, Leo
Towers, Richard
Trego, Chas. T.
Tutwiler, Tom

Valentine, Joseph A.
†Van Buren, Ned
Van Trees, James
†Vargas, Ariel
von Sternberg, Josef

Wagner, Sidney C.
Walker, Joseph
Warren, Dwight
Warrenton, Gilbert
Wenstrom, Harold
Wetzel, Al
Wheeler, William
White, Lester
Wyckoff, Alvin

†Zucker, Frank C.

Special Process

Binger, Ray
Culiy, Russell A.
Dietz, Wm. H.
Edouart, Farciot
Fabian, Maximilian
Fulton, John P.
Griggs, Loyal
Hammeras, Edwin
Haskin, Byron
†Jackman, Fred, Jr.
Jackman, Fred, Jr.
Jennings, J. D.

Kelley, W. Wallace
Koenekamp, H. F.

†Lipp, Leo
Lipstein, Harold
Lynch, Warren

Pollock, Gordon

Ries, Irving C.
Roberts, Irmin

Smith, Arthur
Van Enger, Willard

Walker, Vernon L.
Williams, William N.
Wrigley, Dewey
Wimpy, Rex

Zech, Harry

Operative Cinematographers

Albert, C. L.
Anderson, Don
Anderson, Wesley
Arling, Arthur E.

Badaracco, Jacob
Bader, Walter
Ballard, Lucien
Bell, Jack C.
Bennett, Guy M.
Bennett, Monroe
Bentley, Fred
Birac, Joe
Blackstone, Cliff
Booth, Frank H.
Bradley, Wilbur H.
Burks, Robert

Campbell, Arthur
Castle, Walter H.
Chewning, Wallace
Clark, Roy
Clemens, Geo. T.
Cline, Wilfrid M.
Cohen, Edward J.
Collings, Russell D.
Cortez, Stanley

Davis, Harry
Davis, Leland E.
Dean, Faxon
Diamond, Jas. R.
Drought, James B.
Dunn, Linwood G.

Eslick, LeRoy
Estabrook, Edw. T.

Fapp, Daniel L.
Feinidel, Jockey
Fetters, C. Curtis
Finger, Frank
Finger, John
Fitzgerald, Edward

MEMBERS

Galezio, Len
Garnett, Paul
Gertsman, Maury
Gibbons, Jeff T.
Glassberg, Irving
Gordon, James
Gray, King D.
Green, Kenneth
Greene, Al M.
Guffey, Burnett
Guthrie, Carl

Hallenberger, Harry
Harlan, Russell
Harper, James B.
Harris, Emil
Heckler, Wm. G.
Henderson, Edward
Hoag, Robert
Huggins, L. Owens

Jennings, Louis E.
Jones, Ailyn C.

†Kelly, Wm. J.
Knott, James S.

Landon, Theodore
Lane, Al L.
Lanning, Reggie
LaShelle, Joseph
Laslo, Ernest
Lawton, Charles C.
Lerpaie, Paul K.
Levitt, Sam
Lindon, Lionel A.
Love, Cecil

MacDonald, Joe
Marta, Jack A.
Mayer, Fred
McCormick, John T.
Meade, Kymie
Merland, Harry
Metty, R. L.
Mols, Pierre M.
Myers, Albert

Newhard, Guy J.
Newhard, Robert S.
Nogle, Geo. G.
Novak, Joe

Palmer, Robert
Pierce, Otto
Pittack, Robert
Pyle, Edward

Ramsey, H. Clark
Ramsey, Roy L.
Rand, William
Redman, Frank
Ries, Ray
Roberts, Albert G.
Roberts, Josiah
Robinson, Walter C.
Roe, Guy
Rosenberg, Irving

Salerno, Charles, Jr.
Scheurich, Victor
Schmitz, John J.
Schurr, William F.
Shoedack, G. F.
Shipman, Bert
Smith, Ernest F.
Smith, Harold I.
Smith, William Cooper
Snyder, Wm.
Stine, Clifford R.
Sullivan, Wm. F.
Suttees, Robt. L.

Tappenbeck, Hatto
Thompson, Stuart
Titus, Frank

Ulm, William R.
Unholz, George
Vaughan, Roy V.
Vogel, Paul Charles
Vogel, Willard I.

Wester, Carl
White, Ben
Wild, Harry
Wilky, Guy L.
Williams, Al E.
Williamson, James

Assistant Cinematographers

Abbott, L. B.
Abramson, Melvin
Adams, Eddie
Adams, Ralph G.
Abern, Lloyd
Andersen, Jack
Anderson, Eddie
August, Joseph S.

Babbitt, Royal F.
Baldwin, Harold
Barber, E. C.
Barth, Willard
Beckner, Neal
Bergholz, Emmett
Bessette, Raoul
Boggs, Haskell
Bohny, Chas. R.
Bourn, George
Bradford, Bill
Bridenbecker, Milton
Brigham, Donald H.
Bronner, Robert
Burgess, Frank
Burke, Charles

Cairns, Lawrence
Caldwell, John C.
Carter, Ellis W.
Citron, Joseph A.
Clothier, William H.
Cohan, Ben
Cohen, Sam
Collins, Edward C.
Crane, Chas. M.
Crowford, Lee
Crockett, Ernest J.
Croniger, Henry, Jr.
Crouse, John
Cruze, Warner
Curtiss, Judd

Daly, James
Dalzell, Arch R.
Davenport, Gene L.
Davis, Mark
Davis, Robt. D., Jr.
Daval, Richard S.
Dowe, Harry
Dawson, Fred
DeAngelis, Louis
DeCastellano, Paul
Deverman, Dale
Diskant, George
Dodds, Wm.
Doran, A. Richard
Dowling, Thomas L.
Dugas, Frank
Dye, Geo., Jr.

Eagan, J. P.
Eason, Bert
Eckert, John
Elliott, August J.
Epstein, Jack J.
†Eto, Jack
Evans, Frank D.

Farley, Joseph L.
Fischer, Herbert J.

Foxall, William
Fredericks, Ellsworth

Garvin, Edward
Gaudio, Frank, Jr.
Geissler, Charles R.
Gesler, Arthur
Goss, James M., Jr.
Gough, Robt. J.
Graham, Harold W.
Grand, Marcel
Grant, James Arthur
Green, Don
Greer, John

Hockett, James C.
Haddow, Ledger
Hayes, Towne D.
Higgins, James Colman
Higgs, Stuart P.
Hoffman, Roswell
†Holcombe, Walter B.
Hoover, Russell C.
Horsley, D. S.
Hunter, Kenneth
†Hyland, Edward

Kauffman, R. King, Jr.
Kearns, Edward
Keller, Alfred S.
Kelley, George F.
King, James V.
Klein, Irving
Kluznik, Mark
Koffman, Jack
Kunkel, Lou E.

Lockey, Walter K.
Lane, Art
Laraby, Nelson
Lathrop, Philip
Leahy, Chas. P.
Lubovitz, Alfred
Lerpaie, Carl
Lewis, C. L.
Liggitt, Eugene
Lockwood, Paul
Lykins, Volvie Joe

Mack, Robt. H.
MacBurnie, John
MacDonnell, Stanley
MacIntyre, Andy
Marble, Harry
Margulies, Bill
Martin, John
Martinelli, Enzo
Mautino, Bud
McDonald, Frank
McEdward, Nelson C.
Meade, Kenneth
Mehl, John
Mohr, Paul
Molina, Luis
Moreno, Robert C.
Morris, Thomas C.

Norton, Kay

Orsatti, Alfred

Parkins, Harry
Perreault, Oliver D.
Rankin, Walter
Reinhold, Wm. G.
Rhea, Robert
Riley, William
Rugg, Mavard B.
Russell, John L., Jr.

Sanford, S. A.
Sargent, Don
Scheuing, Albert
Schuch, William
Seawright, Byron
Shearman, Roger C.
Shipper, C.
Shorr, Lester

Slifer, Clarence
Sloane, James
Smalley, Alfred E.
Smith, H. C.
Soderberg, Edward F.
Southart, Fleet
Straumer, E. Charles
Strong, Glenn
Strong, William M.

Terzo, Fred
Thomas, Jack
Tolmie, Rod
Tripp, Roy

Van Trees, James, Jr.
Van Wormer, John Pierce

Walsh, Mike
Ward, Lloyd
Webb, Harry
Weddell, Paul K.
Weiler, Carl
Weiler, John
Weisbarth, Ted
Weissman, Leonard
Wellman, Harold
Wendall, Jack E.
White, Edward L.
Whitell, William
Willis, Bert
Worth, Lothrop

Still Photographers

Alexander, Kenneth
Allan, Ted
Alsop, George
Anderson, Bert
Ager, Virgil
Autrey, Max

Bachrach, Ernie
Barrington, Frank
Barr, Harry
Breaux, Joseph F.
Bredell, Elwood
Brown, Milton
Bullock, Chas. E.
Bullock, Malcolm

Clark, Sherman L.
Coburn, Robert
Cooper, John
Cronenweth, W. E.
Crosby, Warner N.
Crowley, Earl

Elliott, Mack
Ellis, John
English, Donald A.
†Estep, Julius D.
Evans, Thomas
Evansmith, Henry

Farrell David H.
†Faulich Roman
Fryer, Elmer
Gold, Milton
C. Allen Clarence "Stax"
Graybill, Duward
Grimes, William H.

Head, Gordon G.
Hendrickson, Fred S.
Hester, Jerome E.
Hewitt, Clarence B.
Hommel, Geo. P.
Hopcraft, N. John

Johnson, Roy L.
Jones, Raymond H.
Janis, Mac

Kahle, Alexander
Kling, Clifton
Kornmann, Gene

Lacy, Madison S.
Leiber, Herman
Lippman, Irving
Lobben, C. Kenneth
Longest, Gaston
Longworth, Bert
Lynch, Bert

MacDonald, Melvin A.
MacLean, Roy D.
Monatt, S. C.
Marigold, Mickey
Martin, Shirley Vance
McAlpin, Hal A.
Miehle, John J.
Morrison, Talmage H.

Paul, M. B.

Richardson, C. E.
Richee, Eugene R.
Robbins, Leroy S.
Rowley, Les

Schafer, Adolph L.
Schoenbaum, Emmett A.
Sibbald, Merritt J.
Sigurdson, Oliver
Six, Bert
Stone, Ed

Tanner, Frank
Thomas, Wm. E.

Van Pelt, Homer

Walling, Will, J.
Welbourne, Chas. Scott
Wickoff, Harold M.

Honorary Members

Mr. E. O. Blackburn,
Los Angeles, Calif.
†Mr. George Eastman,
Rochester, N. Y.
†Mr. Thomas A. Edison,
Orange, N. J.
Mr. Albert S. Howell,
Chicago, Ill.
Mr. George A. Mitchell,
Los Angeles, Calif.

Associate Members

Mr. Louis A. Bonn
Mr. George Cave
Dr. L. M. Dieterich
Mr. Fred Gage
Dr. Emory Huse
Dr. Lloyd A. Jones
Dr. C. E. K. Mees
Dr. Herbert Meyer
Mr. Hollis Moyse
Dr. W. B. Rayton
Dr. V. B. Sease
Dr. J. S. Watson, Jr.

Inactive Members

Dunning, Dodge
DuPont, Max B.
Fildew, William
Glover, Martin G.
Graham, Stanley
Jackson, Dr. Floyd
Lockwood, J. R.
†Paul, Edward F.
Roos, Len H.
Stull, William

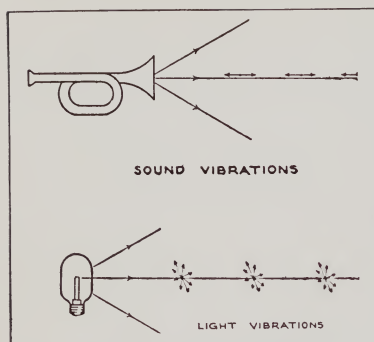


Fig. 1. Sound waves vibrate along the direction of travel; light waves vibrate at right angles to the ray, and ordinarily, in all possible directions.

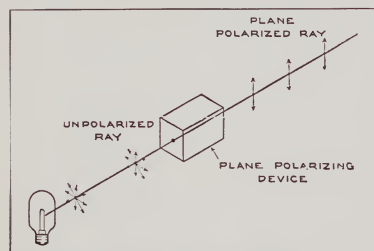


Fig. 2. Any plane polarizing device cuts down the possible directions of vibration to only one; this one is parallel to the vibration plane of the device.

OUR eyes respond naturally to differences in color and in intensity of light, and it is by these differences that we are able to see the world around us. There is another property in which light rays may differ, but our eyes, unaided, can not see those differences. This property is called "polarization," and is concerned, as explained later, with the manner in which the light ray vibrates. Light rays may be polarized by optical devices; they are also partly polarized by reflection from common objects. It also happens that clear skylight is partly polarized. For the last two reasons, much of the light by which we see things is polarized to some extent, a fact we first realize when we look through an Eastman **Pala-screen**.

The Nature of Light Rays

The nature of light has long been a matter of speculation. It was once generally held that perception of light depended upon the reception by the eye of small discrete particles shot off from the source of light; just as at one time it was held that the perception of sound depended upon the impact upon the ear-drum of small particles shot off from the sources of the sound. This theory of light has the advantage that it immediately explains reflections; just as an india-rubber ball bounces from a smooth wall, whereas it will be shot in almost any direction by a heap of stones.

Photographic

So these small particles would rebound in a definite direction from a polished surface, such as a mirror, whereas a rough surface, such as paper, would merely scatter them. This theory of the nature of light appeared adequate until it was found that it was possible, by dividing a beam of light and slightly lengthening the path of one of the halves, and then re-uniting them, to produce periods of darkness similar in nature to the nodes produced in an organ-pipe, where the interference of waves of sound is taking place. It could not be imagined that a reinforcement of one stream of particles by another stream of particles in the same direction could produce an absence of particles, while the analogy with sound suggested that, just as sound was known to consist of waves in the air, so light also consisted of waves.

Light can not consist of waves in the air, partly because we know that it travels through interstellar space, where we imagine that there is no air, but also because the velocity of light, 186,000 miles per second, is so great that it is impossible that it could consist of a wave in any material substance with which we are acquainted. It is, however, supposed that there must exist, spread through all space and all matter, what is termed the ether, and that light consists of waves in this ether.

How Light Waves Are Polarized

The vibration of a light wave is not along the direction of the ray, as in the case of sound, but is at right angles to the ray and usually in all possible directions, that is, up and down, sidewise, etc. It is possible by various devices to change the light ray so that it vibrates in only one direction, as shown in Fig. 2. This one vibration is not only composed of the one originally vibrating in this same direction, but is also composed of parts of all the others, except the one vibrating at right angles to it. The result is that almost half of the light is allowed through, even though there is only one direction of vibration. It may help to explain this if we draw an analogy.

Imagine a string stretched horizontally, passing through a slit in a card at right angles to it. If the slit is vertical, the string is able to vibrate in a vertical plane only, and if the slit is horizontal, the vibrations are restricted to a horizontal plane. If the card is rotated, the vibration plane of the string follows the slit. Light behaves in much the same way, except that the vibrations require the optical equivalent of a mechanical slit. A light ray in which only one direction of vibration exists is said to be **plane polarized**, that is to say, polarized in one plane. The plane of polarization, that is, the plane parallel to the vibration of the emerging ray, is definitely fixed in the polarizing device, and is rotated when the polarizing device is rotated. A second polarizing device, placed in the path of the ray leaving the first polarizer, may or may not transmit the plane pol-

Possibilities of Polarized Light*

by
F. Tuttle and J. W. McFarlane

* Reprinted from July, 1935, *Journal of the Society of Motion Picture Engineers* as presented at the Spring, 1935, Meeting at Hollywood, Calif.

** Eastman Kodak Co., Rochester, N. Y.

arized ray, depending upon its angular position. At one angle, practically no light is allowed through, and the polarizers are said to be "crossed." At 90 degrees from this position, all the light from the first polarizer goes through, and the polarizers are said to be "parallel."

A number of polarizing devices, such as prisms made from crystalline Iceland spar, known as Nicol prisms, have been known to scientific workers for many years. Up till now, there has been no polarizing device suitable for ordinary photography. Nicol prisms are very costly, have a very small field, their length being much greater than their free aperture. The desirability of a highly efficient polarizing device in sheet form has been recognized for some time. Such a material is now available, having the necessary optical properties and capable of being produced upon a commercial basis in sufficiently large sheets at a cost low enough to make it practical in photography. The invention is due to Mr. Edwin H. Land, who was the first to prepare a commercially practical sheet containing a polarizing material oriented properly for satisfactory performance. In this material are countless minute rod-like crystals, which are all parallel to each other. They may be regarded as optical slits, so when the material is rotated, the direction of light vibration is rotated, just as rotating the slit made the string's direction of vibration follow it. The Eastman **Pola-screen** incorporates this polarizing sheet material, cemented between glass plates. The Eastman **Pola-screen** is therefore a large polarizing device, free from the limitations of the Nicol prism.

The Importance of Polarized Light in Photography

The importance of polarized light in photography is due to the way in which all natural substances reflect polarized

light. When a ray of light falls upon, for instance, a sheet of paper, the light that is reflected is composed of two parts which are technically known as the specular and diffuse components. The specular component forms what we know as gloss or glare and enables us to see more or less distinctly an image of the source of light. Light reflected from polished metallic articles is almost entirely specular whereas that reflected from chalk is almost entirely diffuse. The diffuse component is reflected without glare in all directions.

Now, if the ray of light that is illuminating our subject is plane polarized, the reflected rays that form the specular component are still plane polarized, but the rays reflected diffusely are not. If we look at the subject through a **Pola-screen**, we can orient the screen so that practically all the specular reflection is stopped, and see the subject by diffusely reflected light. This fact, which is extremely important, permits the many applications described below. The use of **Pola-screens** in front of the lights illuminates

Continued on Page 340

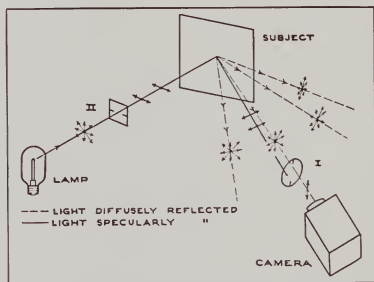


Fig. 3. Photography by diffusely reflected light, using polarizing equipment. Light reflected specularly retains its polarized form; it may therefore be cut out by a **Pola-screen** at the camera. I indicates a **Pola-screen**, Type I; II indicates a large **Pola-screen**, Type II. The indexes on the two **Pola-screens** show their plane of vibration.

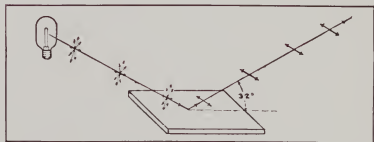


Fig. 4. Ray plane polarized by reflection. A ray of ordinary, unpolarized light is almost completely polarized when specularly reflected at about 32 degrees to any non-metallic surface, such as glass. This permits eliminating oblique reflections from glass and water by a single **Pola-screen** over the lens.

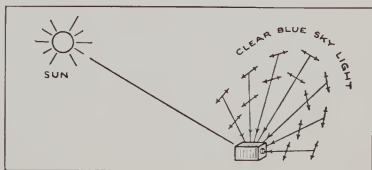


Fig. 5. Clear blue skylight, arriving at right angles to the sun's rays, is polarized. The sky may be darkened by the **Pola-screen** without affecting the color rendering of foreground objects. The strongest effect is obtained with the camera axis roughly at right angles to the sun's rays.

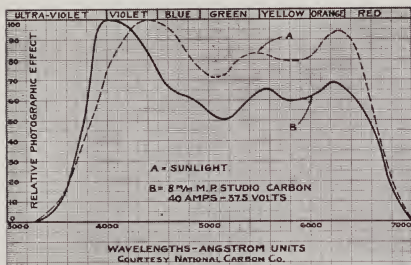


Fig. 1

LIGHTING equipment for any system of natural-color cinematography must conform to definite specifications as to intensity, beam-distribution, and spectral energy distribution or color. In this latter requirement is the answer to the question, so frequently asked, why carbon arc lights are so universally used for color cinematography.

Actually, almost any illuminant used in monochrome cinematography can be used for color-filming; but experience has proven the white flame carbon arc to be the most efficient light-source for this work. Almost all color processes take the spectral distribution of natural sunlight as the normal lighting, and balance their emulsions, compensating filters, and laboratory processes upon that basis. Obviously, if the light used to illuminate interior scenes differs in color from this standard, a corresponding degree of modification must be made in either the photographing or the processing of the color-film, if a normal color-rendition is to be had. In general, corrective filters must be applied either to the light-sources themselves or to the camera—a practice which, in effect, results in wasting a considerable part of the light produced. It is much more desirable to employ light-sources which radiate light closely comparable to natural sunlight.

The white-flame carbon arc does this excellently, as will be seen from Fig. 1. Meeting the requirements for intensity and beam distribution is then a matter of designing the proper lamps around this desirable light-source.

When Technicolor prepared to introduce its three-color process, one of the most important steps was providing for adequate lighting equipment. A survey of existing carbon arc lighting units showed that the majority of these units had been in service for ten or more years, and were scarcely adequate to the requirements of modern production. This was especially true of those units used for the general lighting of sets. They did not deliver a sufficient quantity of light for economical use with color cameras, nor did they distribute it with the desired efficiency. In addition, the carbon feeding mechanisms of some of these units allowed a considerable variation in trim during the burning period, resulting in noticeable changes in both the color and the intensity of the light emitted. In some instances, this mechanism also produced mechanical noises (aside from the electro-physical noises which can be eliminated by the customary choke-coils and condensers) which could not be tolerated in sound recording.

The fundamental unit used for general lighting is the "side arc" or broadside. Technicolor's specifications for these units called for a lamp capable of producing an illum-

ination level of 200 foot-candles at a distance of 15 feet, evenly distributed over an angle of 60°. Its light should be constant in quality and quantity during the period of operation; it should burn silently; and the light radiated should be of spectral quality closely comparable to sunlight.

Existing lamps completely failed to meet all but the lost of these specifications. Tests showed that such units produced an illumination-level of only 60 foot-candles at 15 feet—slightly over 25% of what was required. The distribution was far from even. The feeding mechanism, in which a single solenoid system controlled both of the lamp's two arcs, allowed variations of from 20% to 40% in light flux during the burning period, and introduced mechanical and electrical noises which were highly undesirable. The carbon feed was intermittent, rather than continuous in its action. The best that could be said of the lamp was that its light was of the ideal spectral distribution for color cinematography.

The best way of correcting these shortcomings was to design an entirely new lamp. Collaboration with the engineers of the National Carbon Company produced a new type of carbon which gave an even more ideal spectral distribution. The new carbon is 8mm. in diameter, as compared to the 1/2-inch carbons previously used. Burned at the same amperage as the older type (40-45 Amperes), it gives a snow-white light of considerably greater intensity.

Around this light-source, the new lamp, known as the MR Type 29, was designed. A separate mechanism was provided to feed each of the arcs, thereby insuring greater uniformity in the light-flux, and mechanically silent operation. The reflecting system, by virtue of modern design, gave an exceptionally even distribution of light over the required 60° angle. The intensity produced—more than 220 foot-candles at 15 feet—exceeds the requirement by 10%, and the light produced is constant in both quantity and quality. In operation, the lamp is silent, and the spectral energy distribution is almost identical with that of sunlight.

A companion to this broadside is the "scoop," MR Type 27 (Fig. 2), used for overhead lighting. It is identical with the broadside except for the means used for its physical support and the shape of its hood.

For spotlight purposes, the familiar 80 Ampere Rotary Arc spotlight is the most generally used unit. Though it is not, judged by the most modern standards, an ideal unit, it proved adequate for use with color cameras. In most instances, the basic change necessary—fitting fibre gears to silence the feed mechanism—had already been made. Careful attention to maintenance is, however, necessary: pitted and soiled condensers will materially reduce

Artificial

Sunlight for Color Cinematography

by
Peter Mole
Mole-Richardson, Inc.

the light output, and variations in the arc gap will alter the spectral characteristics of the light sufficiently to be visible in the Technicolor picture. More modern units are therefore being developed to replace these lamps.

Due to the inherent characteristics of the high-intensity arc, the spectral energy distribution is found to be considerably higher in the blue than is that of the broadside. For this reason, a straw-colored gelatin filter is used over these lamps in order to maintain the proper color balance.

Where the highest intensities are required, the 24" and 36" sun arcs are used. Existing units of this type are, in the main, satisfactory for color photography when properly silenced by choke coils and fibre gears, and when fitted with straw-colored gelatins to equalize their spectral distribution.

There is no danger from "kleig eye" with modern arcs, properly used. "Kleig eye" is caused by various of the ultra-violet frequencies lying below 3400 Å., which can easily be filtered out by placing a sheet of ordinary lead glass in front of each arc. This is invariably done on Technicolor sets; and since the visible spectrum lies entirely above 3400 Å., the injurious frequencies are eliminated without any loss of useful light. At the other end of the spectrum—beyond about 7,000 Å.—lie the infrared and heat frequencies, which can also prove objectionable when a high intensity of illumination is used. In comparison to the current consumed and the light produced, carbon arcs emit less of these high frequencies than any commonly used illuminant.

All of these lamps may be fitted with special filters and diffusers in order to produce effects necessary for any scene. Gelatin hangers of various colors, for instance, are used for projected color effects, or for isolated effect lightings. Frosted gelatin hangers are used to soften down some lamps. The sun arcs can be fitted with cylindrically lens-ticulated "diverging doors" when it is necessary to diffuse their light. The broadsides may be fitted with special Facorlite glass screens, sandblasted on one side and matted on the other, for diffusing purposes.

In conclusion, it should be stated that while these new

units have been developed, and the older ones modernized, for use with the three-color Technicolor process, they are essentially adaptable to any conceivable color process. Sunlight will always be the normal light-standard for color photography, for commercial practicability will demand equipment which can be used interchangeably, indoors and out. And for illuminating interior scenes for color, the modern carbon arc lamp is thus far the closest approach to artificial sunlight.

A brief summary of the lighting units most generally used in Technicolor photography, together with notations as to the lamp-type, trim, current and uses, may at this point be of interest for reference purposes.

A. General Lighting Units.

1. Twin-arc broadside (MR29). Twin vertical trim, double solenoid feed. Trim: 8mm x 12" copper-coated studio carbons, positive and negative. Current: 40 Amperes; 35-40 Volts at arc. Use: general floor lighting.

2. Twin-arc Scoop (MR27). Twin vertical trim, double solenoid feed. Trim: 8mm x 12" copper-coated studio carbons, positive and negative. Current: 40 Amperes; 35-40 Volts at arc. Use: general overhead lighting.

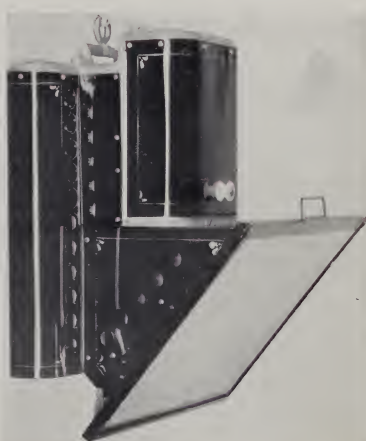
B. Spotlighting and Modelling-Lighting Units.

1. Eighty Ampere Rotary Arc Spotlight. Rotary positive High Intensity arc, motor feed, condensing-lens spotlight. Trim: 1/2"x12" 80 Amp. rotary spot positive, 5/16"x9" or 3/8"x9" copper-coated negative. Current: 73-80 Amperes; 50-55 Volts at arc. Use: backlighting and spotlighting.

2. Twenty-four-inch Sun Arc (24" diameter mirror). Rotary positive High Intensity arc, motor feed, parabolic mirror spotlight. Trim: 16mm x 18" or 20" H. I. Positive, 11mm x 10" pl. coated negative. Current: 135-150 Amperes; 68-72 Volts at arc. Use: backlighting and spotlighting.

3. Thirty-six-inch Sun Arc (36" diameter mirror). Rotary positive High Intensity arc, motor feed. Trim: 16mm x 18" or 20" H. I. positive, 11mm x 10" coated negative. Current: 135-150 Amps; 72 Volts at arc. Use: backlighting and spotlighting when highest intensity is needed.

Fig. 2





James Wong Howe, A.S.C.

James Wong Howe

—An Uncommon Artist

by
Harry Burdick

JAMES Wong Howe, by big odds, is probably the most colorful cinematographic celebrity of Hollywood. The remote province of Kwangtung, China, gave him birth. Ten formative years of his boyhood were spent on an Oregon farm with foster-parents who are Irish. Match that, if you can, as background for an ace cinematographer.

While engaged in the practice of his profession, he is wholly American. Delightfully democratic and popular, he is "Jimmy" to everyone. He utilizes the same U.S.A. lenses and chemicals and technical equipment as the most rock-bound Yankee.

But you'll note he proudly includes his Chinese surname, Wong, in his signature. And the straight strains of celestial blood that course his veins dictate his theories of screen art.

In other phrases, his mind and his hands are pure American; his eyes and his heart are of China. Plus the item, as Richard Boleslawski aptly puts it, "There's plenty of Irish, too, in Jimmy."

Since 1917, when he first captured the images of Mary Miles Minter in his camera on the old Vine Street lot of Famous Players, Jimmy has been giving deep, philosophical thought to his profession. His technique is founded on fundamentals amazingly well-defined, sharply-stated and progressive.

He looks into the immediate future with much hope and confidence for his profession. He feels that cinematography to come will escape from its current emphasis of stereotyped photographic technical perfection and graduate into realms of realism. Prevailing stress on technicalities—of light and balance and exposure—freezes out the humanness and naturalness from finished works. They become too exactly nice, too mechanically perfect, with elaborate studio preparation too evident.

The true artist always conceals the effort. He takes his technical perfection for granted; and it becomes but a means, not the end itself. It is as the concert pianist who plays compositions requiring extreme technical skill and impresses his audience with his exhibition of mechanical deftness, compared with the artist who with no noticeable exertion to divert his audience makes sweet music.

Screened photography, to Jimmy, should never be obtrusive, it should not screamingly clamor for notice. Its perfection should be so unassumingly perfect as not to pull audience attention from the unfolding drama. It should be as a well-dressed woman—reticent, confident, unobtrusive in her appearance. It should not be conspicuous either for being over-dressed nor under-dressed.

Jimmy wants a scene to look humanly and naturally real, rather than being only a demonstration of the scientific perfection attained by chemists. With the new, faster and better lenses, film and lights available, he can see scenes photographed under actual lighting; a candle-lit table actually lit by candles. Giving truthfulness and fidelity of reproduction from life to the screen.

But don't for a moment hold opinion that Jimmy is a radical or a dreamer. To the contrary, he is amply able to deliver, upon request, celluloid images as mathematically accurate as any of his confreres. His recent work "Flame Within" is an instance. The story is placed in apartments and offices that are gems of interior decoration, each piece precisely placed. The cinematographic treatment is in keeping. It is as though each and every scene had been shot after lengthy consultation with rules and regulations of exposure book and meter. Each is in perfect balance. Each frame of it is technically accurate.

But it is his current work that warms Jimmy's heart and provides scope for his uncanny artistry. It is a circus picture, "O'Shaughnessy's Boy." The majority of scenes are under canvas and it's an actual tent, not a stage set. Jimmy has not exactly designed sets on which to paint mathematically determined shadows. He shoots against that drab gray background and lets the canvas make its own natural shadows.

He has no elaborate superstructure of top lights, and is happy indeed, because he is forced to handle his lighting in a natural, lifelike manner. There's a tendency toward too much back-lighting, anyway, he feels. There's not that much in actual life.

He is letting detail fall away and permitting his coming audiences the enjoyable privilege of using their imagination. He is using no long revealing shots of crowds. Instead he is using close shots, catching the crowds in section; cutting out these sections just as a newspaper camera might.

Continued on Page 341

Training Cinematographers in Russia

by

Vladimir S. Nielsen

President of the Faculty of Cinema Technique,
State Motion Picture Institute,
Moscow, U.S.S.R.



Vladimir S. Nielsen

As Told to a Staff Writer

FIFTEEN years ago, there was no Film Industry in Russia; today, the output of the Russian studios is equal, in volume at least, to that of Hollywood. At the close of the Revolution, we had no studios worthy of the name; very little equipment; and but a pitiful handful of artists and technicians. Today, we have 19 modern studios located in various parts of the Union, using increasingly modern equipment, and manned by a steadily growing staff of trained workers. Forty thousand film-hungry theatres clamour for our product: this year, our schedule calls for 300 feature-length productions, with a corresponding number of short-subjects, cartoons, news-reels, and educational films. Next year we must make 600, and by 1937, our schedule must be increased to 900 features. More studios are to be built, more modern equipment obtained, and more artists and technicians trained.

The basic unit of the Russian cinema system is the team of Director and Cinematographer. They work together as co-producers, jointly supervising every detail of production, from story to scoring, and sharing in the film's profits. Their responsibilities—both moral and financial—are very great; therefore we strive to ensure their success by equipping them with a thorough education in their specialties before putting them to work. All our Directors and Cinematographers must be graduates of the State Motion Picture Institute, exactly as Doctors or Engineers everywhere must be graduates of accepted medical and engineering colleges.

The Russian Cinematographer prepares himself by four years of intensive study at the Institute. The course is difficult, and the standards exacting: less than 65% of those who enter, graduate. But when one has completed the course, we know that he has both the theoretical knowledge and the practical experience to prove himself a thorough master of his craft.

Entering the Institute, the prospective Cinematographer is expected to have an education at least equal to that obtained in a first-class technical high-school, with sufficient theoretical and practical knowledge of photography so that little time need be wasted inculcating fundamentals. He may attend the Institute in one of two ways: paying his own expenses (in which event he must usually spend part of his time in self-supporting work); or he may come on a scholarship from his studio—in which event the studio pays his living expenses, etc.

The curriculum includes composition, principles and history of Art, chemistry, physics, optics, electrical engineering as applied to studio problems, philosophy, and, of course, both practical and theoretical instruction in the details of Cinematographic work. Cinematography students also study some of the basic studies included in the Director's course, while the Directors, in order to understand the work and aspirations of the Cinematographer, are required to take a brief course in the principles of Cinematography. This last also applies to actors, as well, for if they are to appear before the camera, they must know something of the camera and how it affects them.

The teachers in our Institute are not mere theorists, but practical exponents of what they teach. How else would they have authority to instruct their pupils? The famous Director, Sergei M. Eisenstein, for example, is President of the Directors' Faculty, and spends half the year in actual production, the other half in teaching. I am myself an active Cinematographer, devoting six months of every year to photographing films directed by Alexander, Eisenstein's former associate. Edvard Tisse, who photographs Eisenstein's films, is likewise on the Cinema Technique Faculty.

As a graduating examination or thesis, each student of the Cinematographer's course is required to make a short film personally. He must write the story, cast the roles, direct, photograph and edit the production, single-handed. The expense, of course, is borne by the school; after all, what better proof could there be of our teaching, and of the student's ability?

Continued on Page 342



PHOTOGRAPHY

of the MONTH

"MAKE A MILLION" (Monogram)

Harry Neumann, A.S.C., Directing Cinematographer
Daily Variety (June 19, 1935): "Photography by Harry Neumann is considerably above average."
Hollywood Reporter (June 19, 1935): "Neumann's photography is better than average."
The Film Daily (July 9, 1935): "Photography, Good."

"MEN WITHOUT NAMES" (Paramount)

Ben Reynolds, A.S.C., Directing Cinematographer
Daily Variety (June 19, 1935): "Ben Reynolds has handled his camera well."
Hollywood Reporter (June 19, 1935): "Reynolds' photography is good."
The Film Daily (June 29, 1935): "Photography, Fine."

"THE GLASS KEY" (Paramount)

Henry Sharp, A.S.C., Directing Cinematographer
The Film Daily (June 15, 1935): "Photography, A-1."

"MARY JANE'S PA" (First National)

Ernest Haller, A.S.C., Directing Cinematographer
The Film Daily (June 14, 1935): "Photography, A-1."

"CHINA SEAS" (M.G.M.)

Ray June, A.S.C., Directing Cinematographer
Hollywood Reporter (June 24, 1935): "The photography of Ray June tops even his usual high standard. Several of his shots, the lighting on the bridge for instance, should be framed. The storm sequence is a technical wonder."
Daily Variety (June 24, 1935): "Ray June's photography is class throughout."

"HARDROCK HARRIGAN" (Fox)

Frank Good, A.S.C., Directing Cinematographer
Hollywood Reporter (June 25, 1935): "Frank Good's photography contributing to sequences that held a crowded house breathless. It's a workmanlike job throughout."
Daily Variety (June 25, 1935): "Photography by Frank B. Good is particularly effective, especially the underground shots where he has succeeded in giving closeups of tunnel drifting that are both educating as well as thrilling."
Motion Picture Daily (June 26, 1935): "The photography of the great engineering effort by Frank Good is a pictorial delight."
The Film Daily (July 1, 1935): "Photography, A-1."

"BABY FACE HARRINGTON" (M.G.M.)

Oliver T. Marsh, A.S.C., Directing Cinematographer
The Film Daily (June 19, 1935): "Photography, good."

"SYMPHONY OF LIVING" (Invincible)

M. A. Andersen, A.S.C., Directing Cinematographer
The Film Daily (June 22, 1935): "Photography, Good."

"ACCENT ON YOUTH" (Paramount)

Leon Shamroy, A.S.C., Directing Cinematographer
Daily Variety (June 27, 1935): "Photography by Leon Shamroy is eye-filling."

"MAD LOVE" (Metro)

Chester Lyons and Gregg Toland, A.S.C., Directing Cinematographers
Hollywood Reporter (June 27, 1935): "Lyons' photography is excellent and given to the right mood."
Daily Variety (June 27, 1935): "Camera sense is vividly evident behind the excellent photography of Chester Lyons and Gregg Toland. Photographic effects and support of suspense is one of the striking elements of the picture."
The Film Daily (July 1, 1935): "Photography, Best."

"GIRL FROM TENTH AVENUE" (Warners)

James Van Trees, A.S.C., Directing Cinematographer
Hollywood Reporter (June 28, 1935): "The photography by James Van Trees very good."
Daily Variety (June 28, 1935): "Picture has been well photographed by James Van Trees and adequately mounted."

"STRANDED" (Warners)

Sid Hickox, A.S.C., Directing Cinematographer
Daily Variety (June 28, 1935): "Photography by Sid Hickox is excellent."

"WELCOME HOME" (Fox)

Arthur Miller, A.S.C., Directing Cinematographer
Hollywood Reporter (June 29, 1935): "Arthur Miller's camera work is eighteen karat all the way."
Daily Variety (June 29, 1935): "Arthur Miller's photography does full justice to the material."

"ANNA KARENINA" (M.G.M.)

William Daniels, A.S.C., Directing Cinematographer
Hollywood Reporter (June 29, 1935): "Another very special bow to Daniels for his photography."
Daily Variety (June 29, 1935): "Photography of William Daniels is perfect."

"IN CALIENTE" (First National)

Sol Polito, A.S.C., Directing Cinematographer
The Film Daily (June 26, 1935): "Photography, A-1."
Hollywood Reporter (July 5, 1935): "Sol Polito does some minor wonders with the photography."
Daily Variety (July 5, 1935): "Sol Polito's photography is his usual workmanship accomplishment."

"SPRING TONIC" (Fox)

L. W. O'Connell, A.S.C., Directing Cinematographer
The Film Daily (June 26, 1935): "Photography, Good."

"ALIAS MARY DOW" (Universal)

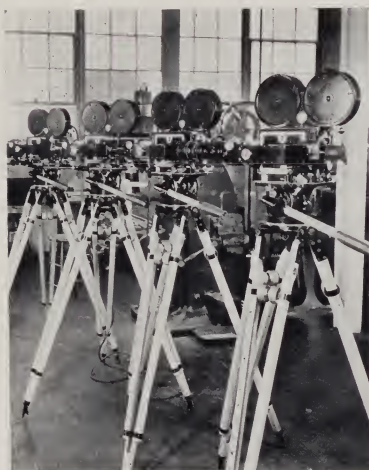
Joseph Valentine, A.S.C., Directing Cinematographer
The Film Daily (June 29, 1935): "Photography, Good."

SENSATION

EASTMAN Super X Film was originally designed for rephotographing projected backgrounds. Yet because of its great speed it also won fame as the negative extraordinary for tough newsreel shots. And now it is being widely used for regular feature production, as well. Offering not only extra speed but generally improved photographic quality, Super X is unquestionably the sensation of the year in 35-millimeter raw film. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *SUPER X*

PANCHROMATIC NEGATIVE



A group of four Mitchell Cameras recently purchased by the U. S. Navy Air Corps.

"LOVE ME FOREVER" (Columbia)

Joseph Walker, A.S.C., Directing Cinematographer
The Film Daily (June 28, 1935): "Photography, A-1."

"BLACK SHEEP" (Fox)

Arthur Miller, A.S.C., Directing Cinematographer
The Film Daily (June 28, 1935): "Photography, A-1."

"DINKY" (Warner Bros.)

Arthur Edson, A.S.C., Directing Cinematographer
The Film Daily (June 28, 1935): "Photography, Good."

"IN OLD KENTUCKY" (Fox)

L. W. O'Connell, A.S.C., Directing Cinematographer
Hollywood Reporter (July 1, 1935): "The photography of L. W. O'Connell is of an equally high standard."
Daily Variety (July 1, 1935): "Excellent photography by L. W. O'Connell."
The Film Daily (July 5, 1935): "Photography, A-1."

"ESCAPEE" (M.G.M.)

Ernest Haller, A.S.C., Directing Cinematographer
Hollywood Reporter (July 2, 1935): "Ernest Haller's photography equals anything he has ever done."
Daily Variety (July 2, 1935): "Photography of Ernest Haller is a workmanlike job."
The Film Daily (July 6, 1935): "Photography, First Class."

"FRONT PAGE WOMAN" (Warners)

Tony Gaudia, A.S.C., Directing Cinematographer
Hollywood Reporter (July 2, 1935): "Photography by Tony Gaudia is topnotch as usual."
Daily Variety (July 2, 1935): "Tony Gaudia's photography is perfect."
Motion Picture Daily (July 3, 1935): "The Camera Work of Tony Gaudia is good."
The Film Daily (July 11, 1935): "Photography, A-1."

"SHE" (Radio)

J. Roy Hunt and Vernon Walker, A.S.C., Directing Cinematographers

Hollywood Reporter (July 2, 1935): "The credits for the picture lie mainly with the photography of Roy Hunt and Vernon Walker."

Daily Variety (July 2, 1935): "Picture's chief merits belong to J. Roy Hunt for his camera work and Vernon Walker for his striking photographic effects."

The Film Daily (July 8, 1935): "Photography, Fine."

"UNKNOWN WOMAN" (Columbia)

Henry Freulich, A.S.C., Directing Cinematographer
Hollywood Reporter (July 2, 1935): "Henry Freulich's photography is okay."

"PAGE MISS GLORY" (Cosmopolitan-Warners)

George Falsey, A.S.C., Directing Cinematographer
Hollywood Reporter (July 3, 1935): "George Falsey's photography is excellent."

Daily Variety (July 3, 1935): "George Falsey's photography is swell."

The Film Daily (July 8, 1935): "Photography, Fine."

"DON'T BET ON BLONDES" (Warners)

William Rees, A.S.C., Directing Cinematographer
Hollywood Reporter (July 5, 1935): "The scenes are short, swift and sure with full advantage taken of the camera's flexibility in story telling. Photographer William Rees has even worked out some split screens to help maintain tempo. Photography top notch."

Daily Variety (July 5, 1935): "William Rees' photography is up to standard."

"THUNDER IN THE NIGHT" (Fox)

Bert Glennan, A.S.C., Directing Cinematographer
Hollywood Reporter (July 5, 1935): "The photography of Bert Glennan is way above average as is the rule with this canny cameraman."

Daily Variety (July 5, 1935): "Bert Glennan handled the camera effectively."

"WHAT PRICE CRIME" (Beacon)

Harry Forbes, A.S.C., Directing Cinematographer
Hollywood Reporter (July 5, 1935): "Harry Forbes has done some outstanding shadow photography in the opening sequence and the rest of his stuff is first rate."

"MURDER MAN" (M.G.M.)

Lester White, A.S.C., Directing Cinematographer
Hollywood Reporter (July 6, 1935): "White's photography is okay."

Daily Variety (July 6, 1935): "Photography by Lester White and general technical contributions are of excellent quality."

The Film Daily (July 9, 1935): "Photography, A-1."

"SILK HAT KID" (Fox)

Daniel Clark, A.S.C., Directing Cinematographer
Hollywood Reporter (July 6, 1935): "Daniel Clark's photography and production standard."

Daily Variety (July 6, 1935): "Photography up to standard."

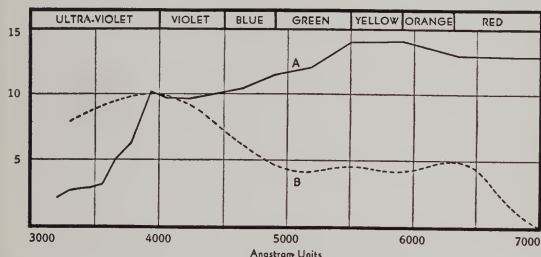
The Film Daily (July 9, 1935): "Photography, Good."

"DRESSED TO THRILL" (Fox)

Rudolph Mate, A.S.C., Directing Cinematographer
Hollywood Reporter (July 6, 1935): "Rudolph Mate gave the sequences a fine photographic interpretation."

Daily Variety (July 6, 1935): "Photography of Rudolph Mate is excellent."

BALANCE YOUR LIGHT



Curve A—Energy Distribution from the new 40 ampere Studio Carbon Arc
Curve B—Color Sensitivity of Supersensitive Panchromatic Motion Picture Film

AT THE SOURCE

STUDIO lighting that is over-strong in yellow, orange and red must be supplied in excess of actual need in order to obtain the required strength of blue and green. The excess colors can be absorbed by filters to obtain balanced color tones on the negative but the excess heat is absorbed by the actors on the stage—much to their discomfort.

NATIONAL MOTION PICTURE STUDIO CARBONS
PROVIDE STUDIO LIGHTING THAT IS BALANCED TO THE COLOR
SENSITIVITY OF MODERN, HIGH SPEED, PHOTOGRAPHIC EMULSIONS

There is no need for speed-absorbing color filters.

They project less than one third as much heat onto the stage as other sources of studio illumination operated at the same photographic intensity.

NEW 40 AMPERE
STUDIO CARBON ARC
NEXT MOST EFFECTIVE
STUDIO LIGHT

PHOTO-
ACTIVE
RAYS

HEAT



The new studio carbon arc lamps, using National Motion Picture Studio Carbons, are clean, quiet and steady in operation.

**THERE IS NO DETERIORATION WITH AGE
THERE ARE NO UNTIMELY OUTAGES**

A high percentage of their radiant energy is concentrated within the most effective range of photographic sensitivity. They provide the maximum of COOL photographic light, **BALANCED AT THE SOURCE** for the requirements of the camera.

MORE SPEED

LESS HEAT

**A BETTER LIGHT
FOR
BLACK and WHITE**

**A NECESSITY
FOR COLOR**



NATIONAL CARBON COMPANY, INC.

Carbon Sales Division, Cleveland, Ohio

Unit of Union Carbide and Carbon Corporation

Branch Sales Offices: New York • Pittsburgh • Chicago • San Francisco

*Give
this new light
a trial* ✓



1515 Cahuenga Blvd.,
Hollywood, Calif.

Phone: GLadstone 2404

ROY DAVIDGE FILM LABORATORIES

Negative Developing
and Daily Print
Exclusively

6701 SANTA MONICA BLVD.

GRanite 3108

MOVIOLA

FILM VIEWING and
REPRODUCING MACHINES
ALL MODELS ON DISPLAY—
FOR SALE—FOR RENT

Illustrated Literature On Request

Motion Picture Camera Supply, Inc.

723 Seventh Avenue New York City
Cable: "Cinecamera"

Scheibe's FILTERS
In World-Wide Use
produce Moonlight and Night
Effects in Daytime—Fog Scenes—
Diffused Focus, and many other effects
With any Camera—In any Climate
George H. Scheibe
ORIGINATOR OF EFFECT FILTERS
1827 WEST 76TH ST., LOS ANGELES, CAL.

Photographic Possibilities of Polarized Light

Continued from Page 331

the subject with plane polarized light. Another such device at the camera lens permits photographing by the diffusely reflected light alone, as is shown in Fig. 3. This is desirable in many cases, because the specularly reflected light or glare obscures more or less the detail that it is desired to record. It is obvious from Fig. 3 that if the Pola-screen at the camera is rotated, some of the specular light will be allowed to pass through, so that the amount of reflection permitted is under the control of the photographer. When the camera Pola-screen is rotated so that its polarizing plane is actually parallel to that of the specular ray, this ray is transmitted even more freely than is the diffuse ray, so that the subject appears to have even brighter reflections and more gloss than it actually does have.

Plane polarized light, or light that is partially plane polarized, is very common in nature, so that the photographer who is equipped with a Pola-screen only on his camera lens finds that he has rather considerable control over contrasts in his subject, even though he is unable to change the lighting of his subject. There are two sources of polarized light in nature: (1) Light rays from a clear blue sky, arriving at right angles to the sun's rays, are strongly polarized (see Fig. 5); when this same skylight is specularly reflected from water, etc., these reflected rays are also polarized. (2) Ordinary, unpolarized light, specularly reflected from any non-metallic surface at about 32 degrees to the surface, is strongly polarized by the act of reflection (see Fig. 4). There is some effect at other angles, but more at zero or 90 degrees.

These two sources, separately and in combination, polarize much of the light from natural things. Unaided, our eyes do not detect polarized light, and so we have not seen until now that much of the light from our surroundings is polarized. Many natural things, seen through the Pola-screen, assume a new and strange beauty.

These effects can be photographed easily with a Pola-screen over the lens alone. It will pay the photographer to view his subjects, both in the studio and outdoors, through a Pola-screen, while rotating it to see the effects.

Properties of the Pola-screens Useful in Motion Picture Work

A. Pola-screen over lens alone—(1) Reducing polarized skylight to bring out clouds and other objects: A very dark sky can be obtained in color photography by this means which is impossible to achieve otherwise. The effect is greatest at right angles to the sun's rays. Therefore, at

sunrise the region of greatest effect is north—overhead—south; at noon—near the horizon in all directions; and at sunset north—overhead—south again. The arc swings from overhead to the west during the morning, from the east to overhead in the afternoon, passing through every part of the sky.

Ordinary objects, faces, blossoms, trees, mountains, buildings, etc., can be made to stand out against the sky in a very beautiful manner. If desired, the brightness of the sky may be increased relatively to objects photographed against it, by rotating the Pola-screen to the appropriate position. In black-and-white photography, the Pola-screen can serve as a filter of variable depth—anything from red filter effects (without distortion on tone values) down to one filter effects may be obtained by rotating the Pola-screen to the desired position.

(2) Changing the contrast of various parts of a subject, without changing the lighting: This effect is very marked in the case of the walls and roofs of buildings, sunlit water, and pavements from above.

(3) Photographing subjects in water, from above: When the angle between lens axis and water surface is about 32 degrees, all reflections from the water surface are eliminated. Reflections may be removed to some extent at other angles, but not at zero or 90 degrees.

Photography through glass or other transparent media: As in the case of water, at 32 degrees from the surface, reflections can be completely removed. This effect can be used to produce double exposures by placing a thin pellicle mirror in front of the camera lens at the required angle, and rotating the Pola-screen at the lens. The image reflected by the pellicle mirror appears or disappears according to the angle of the Pola-screen. Other more obvious applications will suggest themselves, such as photography of aquaria, through windows, and so on.

B. Pola-screens over both lens and lights.—(1) Subduing specular reflections from metallic and other glossy objects: Metallic reflections can not be eliminated entirely, but can be subdued very greatly. Reflections from most other objects can be eliminated if desired. The Pola-screen over the camera lens is crossed with those over the lights for the greatest effect.

(2) Increasing specular reflections: Articles may be made to appear unnaturally glossy. The change, while considerable, is not as great as that possible in the opposite direction. The polarizing cells are used parallel.

(3) Increasing color saturation: By removing the surface reflection, which is white, the colors of an object increase in their saturation, that is, their purity. The crossed arrangement produces such effects.

(4) Effects upon faces: The crossed position produces a strange matte effect, with no luster whatever, and the facial colors are exaggerated. The parallel position has the opposite result—a very perspiry appearance, with the colors subdued.

(5) Photographing wet objects: The surface reflections from wet objects, such as clinical specimens, present a severe problem, as they hide detail. These reflections may be subdued as desired, or eliminated at the crossed position.

(6) Copying matte prints, pencil sketches, newspaper reproductions, and paintings: Matte prints reflect light specularly in all directions. When this specular component is removed the blacks of the print become much blockier, so that the use of crossed Pola-screens produces a brightness range in the print that is even greater than that of a glossy print viewed in the normal manner. Likewise, the reflections can be removed from pencil graphite and ink particles, producing intense blacks.

(7) Animation cells: Reflections from cells used in animation work build up with successive layers so that contrast is seriously affected, limiting the number of cells which may be used. These reflections may be greatly reduced by the crossed arrangement of Pola-screens.

(8) Bi-refracting crystals and fibers: The phenomenon known as bi-refringence causes any transparent object, possessing the property, to light up, frequently in vivid color, when placed between two crossed Pola-screens. Cellophane, silk, cotton wool, and many natural crystals have this property.

(9) Stained glass and celluloid: Any strained transparent medium displays bi-refringence, and when placed between crossed Pola-screens, shows a strain pattern.

C. Applications in Lighting and Printing.—The variable transmission of two Pola-screens together suggests a number of possibilities. Two Pola-screens meant for lens used together constitute a variable neutral density filter, which may be of interest in making fades in some cases. The arrangement can be used as an intensity control in a printer, and has the merits of simplicity; moreover, it does not cut down the area of the beam.

Two light-source Pola-screens together can be used for controlling spotlight intensity. Cellophane added between these units introduces various color effects.

Various lightings are possible with one Pola-screen over the lens and others at the lights. It is possible to place a back light so covered directly in the camera field. It is also possible to control the light reflected from any light so covered. A control, at the camera, is thus provided. It is therefore possible to photograph the same set with two cameras and obtain quite different lighting effects.

Technical Data

The Eastman Pola-screens have a spectral range of polarizing power from 400-700mμ. They absorb in the ultra-violet, and transmit freely, without polarization, in the infrared. They can be damaged by excessive heat, by placing them within a few inches of a lamp bulb, or imaging a lamp filament upon them.

The most suitable negative materials are the panchromatic materials now in general use. While it is possible to use the Pola-screens with orthochromatic or even with non-color-sensitized materials, the exposure increase is very much greater.

The exposure increase, for the Pola-screen over the lens alone, is about four times. For Pola-screens over both lens and lights, the exposure increase is ten times and upwards, depending upon the nature of the subject. When using a photoelectric type of exposure meter, the Pola-screen for the lens may be held over the meter window at the intended angular position of the Pola-screen. The meter should always be used at the same angular position, as some of these meters are slightly polarizing in their sensitive element.

If calibrated angular scale is desired for repeating and recording settings used for Lens Pola-screens, the following is suggested:

	Angle	Scale Fig.	Effect
Parallel position	0	0	Increased gloss
	45	1	Neutral
	60	2	Decreased gloss
	70	3	"
	76	4	"
	80.5	5	"
	84	6	"
	86.5	7	"
Crossed position	90	8	"

The intervals of this scale will be of equal effectiveness in cutting down the polarized light entering the Pola-screen.

The Pola-screens have a slight scattering power, so that those for lens use must be screened from all extraneous light by a proper lens hood. The Pola-screens supplied for light-source use are not suitable optically for lens use.

The novelty of this subject makes it difficult to say just what application will be of most value in motion picture work. It is, however, a new tool, by which new effects may be achieved, and its limitations are imposed only by the imagination of the user. We are indebted to Mr. E. H. Land for help and suggestions, and to Dr. L. A. Jones for the demonstration film of polarization phenomenon in crystalline structure.

James Wong Howe

Continued from Page 334

His close-ups are decidedly interesting. Seldom do they show the character's entire face. One may be cut off just above the eyes, another cut off at the side. For close-ups, only that facial ore from eyes to chin are of value to Jimmy, mainly the eyes. So why make portraits of the style set by artists of centuries back?

As with all great artists, Jimmy has creative courage; he dares to do. He has a scene where two characters discuss their fear of the circus tiger. Instead of placing his characters in front of the tiger's cage and coming in with a close-up of them, he moved his characters far away from his camera, backed against the tent sidewalls. And with his lights,

De BRIE at SACRIFICE!!

New Type SUPER PARVO DEBRIE Ultra Silent Camera

Has built-in motor, automatic dissolve, pilot pins and anti-bucking device. Four 1000-ft. magazines—40mm, 50mm and 75mm lenses—DeBrie friction tripod and new type DeBrie finder. Leather-covered carrying trunk and tripod cover. It's the latest type equipment . . . like new!

Motion Picture Camera Supply, Inc.
723 Seventh Avenue New York City
Cable: "Cinecamera"

Hollywood
MOTION PICTURE EQUIPMENT CO. LTD.
645 NORTH MARTEL AVE. CABLE ADDRESS ARTREVEES
HOLLYWOOD, CALIFORNIA, U.S.A.

threw a dark shadow of that tiger restlessly pacing to and fro against the gray background. The characters tell of their fear and unknown to them, but very much known to the audience, the object of their fear is stalking in shadow above them. The scene holds intense dramatic value.

Jimmy believes in photographing scenes, rather than talking people. He believes in photographing his story, rather than sets and actors. He believes in showing bits of action as they appear in life, not on studio stages.

He doesn't work by set formulae. He is no rubber-stamp. On a recent tour through the galleries in Europe, he noticed the old portrait painters, the old masters so-termed, had all dined their subjects in studios with a north light coming down at a forty-five degree angle over the artist's left shoulder. Of hundreds he saw, only three had light from the right. Jimmy's artistic heart fairly cried aloud for a portrait done with a south light, from any angle other than forty-five degrees and not coming over either shoulder of the portraitist.

His work is definitely tempered by his ancestry and his study of Chinese art. In China a splash of color and a line or two creates a flower. A few deft lines creates a mountain. He never clutters

up his negative with multitude of detail, just because a thoughtful producer has furnished them in event of their being desired.

James Wang Howe, thanks to his birth and training, is an uncommon artist. He has so fully mastered the mechanics of his profession as to realize their importance and to let them rest there. With such instruments, he sets forth to make pictures that relate story, that unfold drama, that are true and lifelike, that are not photographically conspicuous, that are highest expression of art—life.

To him, with his consummate artistry and the searching philosophy of life he has inherited from the earth's oldest civilization, Jimmy's professional future holds limitless promise.

And, between pictures, in this rousting community called Hollywood, what do you suppose he does for pastime? He goes to Chinatown and talks Chinese philosophy in his own native tongue with fellow countrymen merchants. And he travels, on business. To see nature and life, and to file those scenes in his memory to be used someday.

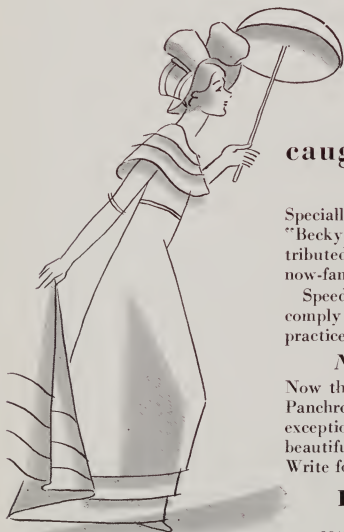
Cinematographic works by James Wong Howe rate an appraising and absorbing eye. They invariably possess the inherent charm and appeal of a Ming vase.

Training Cinematographers in Russia

Continued from Page 335

Graduating from the Institute, the student goes into the field as a fully-qualified First Cinematographer. In the Russian Cinema, we recognize four definite classes of Cinematographers: those who are worthy of making the best and greatest films; those assignable only to what you call "programme pictures"; those suited to short-subjects and comedies; and those fitted for newsreel and similar non-dramatic filming. The salaries the men receive, incidentally, are dependent upon their classification, with the men capable of turning out the best work reaping the largest rewards. Students at the Institute who fail to graduate become Second Cinematographers—or Operatives, as you call them here.

It is during these years at the Institute that the majority of our Director-Cinematographer "teams" originate. They are not formed by compulsion; we realize that a Cinematographer (or Director) may be able to do brilliant work with an understanding partner, while he would be only mediocre with an unsympathetic confrere. Let us say that I, as a Cinematographer, am a romanticist:



Speed Panchro Lenses

caught "Becky Sharp"

Specially modified for use on the Technicolor cameras which filmed "Becky Sharp." Taylor-Hobson Cooke F 2 Speed Panchro Lenses contributed materially to the remarkable color results achieved in this now-famous picture.

Speed Panchros are the logical lenses for color work because they comply fully with the color correction needs of modern production practice. Eleven focal lengths, 24 to 108 mm.

New! 2¼-inch F 1.3 Special Speed Panchro

Now the extremely fast 2¼-inch F 1.3 has been added to the Speed Panchro series. It has the same full chromatic correction, and an exceptionally high degree of correction for other aberrations. Gives a beautifully crisp image even under the most adverse lighting conditions. Write for full details about this and the F 2 Speed Panchros.

BELL & HOWELL COMPANY

EXCLUSIVE DISTRIBUTORS

1848 Larchmont Ave., Chicago; 11 W. 42nd St., New York; 716 N. LaBrea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.) Est. 1907.

clearly, I could not do my best work with a Director whose artistic ideas tended toward surrealism. Therefore, I choose a Director whose ideals are similar to my own. Once formed, these combinations are seldom broken, though either party is free to join a new partner if he feels that such a change would be beneficial. Whatever complaints may arise are adjudged by the officials of the Cinematographers' Association, just as in this country they would be judged by the Board of Governors of the A.S.C. The decision is final.

Once a team-mate has been selected, the Cinematographer shoulders his full share of responsibility for the production. The two, together, choose the story and supervise its adaptation: each scene is carefully planned for dramatic and photographic values—often, the script is broken down into sketches of each angle and set-up, so that when the time comes for filming, everything is a known quantity.

The Director and Cinematographer plan the budget and schedule together, and submit it for the approval of the authorities. As a rule, the average budget for a feature film is about 700,000 roubles; and the authorities are very generous in the matter of schedules, realizing that some films necessarily require more time than others: schedules may range from a few weeks to a year or more.

Once the budget and schedule are approved, the necessary money and other facilities are placed at the disposal of the Director and Cinematographer, and filming begins. The sole requirements are that they adhere to the story submitted, stay within the allotted budget, and deliver the picture on the day they have promised to. Otherwise, their hands are free; and since they themselves have made the budget and schedule, they are expected to know their business well enough to estimate them accurately.

The Cinematographer, in addition to directing the photography of his film, collaborates with the Director in the "Montage," or editing. We have no film-editors in Russia: if a Director can't cut his own film, we do not think him worthy of being a Director.

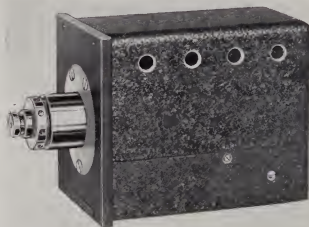
When the picture is released, the Director and Cinematographer usually with the scenarist and musical composer, participate in its profits, dividing between them 3% of the gross receipts. This percentage can often be a very sizeable sum: "Chopoyev," one of the most successful of recent films, has grossed 22,000,000 roubles; I, myself, in the last two months before I left Russia, received over 12,000 roubles from films I had photographed.

Like those of your American Comedians who are under contract to the various studios, the Russian Cinematographer receives his salary throughout the

HIGH FIDELITY Recording Galvanometer

(Variable Area System)

FREQUENCY RANGE
0 to 10,000 Cycles



TECHNICAL DETAILS

Galvanometer element and optical ports are identical with those of the units previously advertised. Our three models, "A" (Tubular), "B" (Compact Mount), and "C" which is illustrated here, give a choice of physical dimensions which permit a neat and convenient installation on any recorder or single system camera. Literature and thorough technical description will be sent on request. To facilitate installation, every order should be accompanied by a sketch showing essential dimensions of recorder or camera. We will mount the unit in your camera or recorder, completely adjust it and furnish a test recording, for a small additional charge.

Model "C" High Fidelity Recording Unit.....\$350.00 in U.S.A.



THE BERNDT-MAURER CORP.

112 EAST 73RD STREET

NEW YORK

FRANK C. ZUCKER

J. BURGI CONTNER

Motion Picture Camera Supply, Inc.

now has the Largest Stock of New and Used Modern Camera Equipment and Accessories of any Camera Supply House in the World!

NEW MITCHELL SOUND CAMERA NOW ON DISPLAY

We sell Simplex Portable 35mm Sound Projectors, Movielas—also new and used Mitchell, B. & H., Akeley, DeBrie Cameras and Equipment.

Regardless of your requirements, whether you want to buy or rent new or used equipment—call us for a quotation.

We only sell equipment that we can guarantee.

Phone, write, wire or cable for quotations.

Eastern Representatives
MITCHELL CAMERA CORPORATION
HARRISON FILTERS
FEARLESS PRODUCTS

**MOTION PICTURE
CAMERA SUPPLY, Inc.**
723 Seventh Ave., New York City

Telephone BRyant 9-7755

Cable Address: Cinecamera

• MOVIOLA •

FILM EDITING EQUIPMENT
Used in Every Major Studio.
Illustrated Literature on request.

MOVIOLA CO.
1451 Gordon St. Hollywood, Calif.

year. There is, however, no rigid compulsion that he must rush from one production to the next; he is expected to work as continuously as possible, but to select stories that will enable him always to do his best work.

By law, our production-units are forbidden to work more than seven hours

per day, except on occasions when the entire troupe expresses a wish to work longer in order to complete a scene or sequence.

Each Cinematographer receives a two-month vacation each year. One month of this period is his own, to do with as he will; the other, he is required to be in Moscow, attending the Institute, in order to keep abreast of the latest developments of his Art. It may be mentioned, incidentally, that if he works in one of the more distant studios, and chooses to vacation at some resort which will take a long time to reach, his travelling-time is added to the vacation, so that he gets his full time of rest.

Technically, our Cinema Industry in Russia is not too greatly different from yours in America. Our studios are similar, but rather more durably constructed of concrete and steel, since we had the advantage of building them from nothing, and recently. Like you, we use Incandescent lighting almost exclusively, though we have arcs for those who want them. Most of our lighting units are European; many are Russian-built. Until quite recently, we used only Agfa film, but of late we have been importing quite a bit of Eastman's excellent product. A Russian film-factory has been established, and produces some panchromatic film, though not as yet in sufficient quantity to meet all our needs.



Everything Photographic
for Professional and Amateur

New and Used, bought, sold, rented and repaired. Designers and manufacturers of H. C. E. Combination lens shade and filter-holder for any size lens.

Hollywood Camera Exchange
1600 Cahuenga Blvd., Hollywood
Tel: HO 3651
Cable Address: HOcamex
Send for Bargain Catalog




TRUEBALL
TRIPOD HEADS
OF SPECIAL ALLOY
LIGHTER WEIGHT

The Same Efficient Head

For follow shots, known for their smoothness of operation and equal tension on all movements.

Unaffected by temperature.

Model B Professional \$300.00
For Bell & Howell and Mitchell Cameras and their respective Tripod. With the ORIGINAL instant release telescopic handle.

FRED HOEFNER
GLadstone 0243
5319 Santa Monica Boulevard
LOS ANGELES, CALIF.



Model A for Amateur motion picture cameras. Attaches to any standard STILL Tripod, \$12.00.

Trueball tripod heads are unexcelled for simplicity, accuracy and speed of operation.

The Hoefner four-inch Iris and Sunshade combination is also a superior product.

Chas. Stumar Passes

● Charles Stumar, A.S.C., ace cameraman with the Universal Studios, was killed instantly on June 29th when his plane smashed up at Calabasas, California, where he was attempting to land with Harrison Wiley, art director, to inspect a location for a scene in "Storm Over the Andes" which he was currently photographing.

Stumar left a wife, also a brother, John, who is one of the directors of cinematography at Columbia studio.

Among some of the recent pictures on which Charlie Stumar worked are included "Werewolf of London," "Transient Lady," "Manhattan Moon" and "Mr. Dynamite."



MAX FACTOR'S
NEW
Satin Smooth
LIQUID FOUNDATION
A REVELATION IN FACIAL MAKE-UP

The Supreme Negative

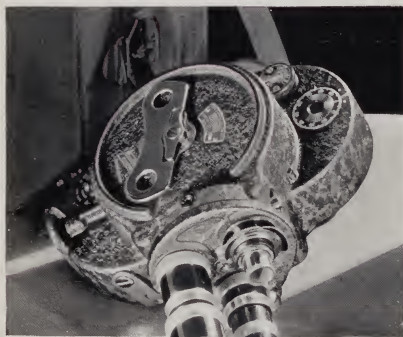
EASTMAN
SUPER X

J. E. BRULATOUR, INC.

Full Color Movies

+++ at the touch of a button

WITH a Filmo 16 mm. Camera loaded with the new Kodachrome three-color film, it is easy to take full color movies of surpassing beauty. Filmo Cameras are as superior for color as they are for black and white. Their fine design and their precise, sturdy construction are essential to fine color results. Their Taylor-Hobson lenses (used on all the big Hollywood sets), are noted for their sharp definition and their ability to focus all colors at the same plane. Any of these lenses may be used for Kodachrome pictures.



FILMO 70-D Camera

FOR THOSE WHO WANT
MAXIMUM VERSATILITY

Seven film speeds—8-12-16-24-32-48-61. Three-lens turret. Variable spy-glass viewfinder giving (instantly) field areas of six different focal length lenses. Critical focuser (optional). 216° shutter opening, giving 1-27th second exposure at 16-speed—ideal for Kodachrome three-color film. Capacity—100 feet of 16 mm. film. There is no finer or more versatile 16 mm. movie camera for general use. Many attachments available (including meter and external magazine) for semi-professional work. Price, \$202.50 up, with Sesamee-locked carrying case.

Filmo 70-E Camera, like Filmo 70-D but with single lens head, \$135 and up including case.



FILMO 121 Camera

MAGAZINE LOADING . . . FEATHER WEIGHT
. . . INVITINGLY SMALL . . . IDEAL FOR
TRAVEL AND FIELD USE

Loaded in an instant—No threading. Just insert the film cartridge. Change from Kodachrome three-color film to black and white film, or vice versa, at any time, anywhere. Standard Taylor-Hobson Cooke 20 mm. F 3.5 lens is instantly interchangeable with speed and telephoto lenses. Two viewfinders: spyglass and waist-level. Built-in exposure chart. Small; only $2\frac{1}{4} \times 3\frac{1}{4} \times 5\frac{1}{4}$ inches. Light; weighs only 2 lbs. 5 oz. *Write for detailed literature.* Price, only \$67.50; leather carrying case, \$7.50

FILMO 75 Camera

THE LOWEST-PRICED 100-FOOT
CAMERA OF COMPARABLE QUALITY

Now priced at \$59.50, the slender and patrician Filmo 75, built fully to Bell & Howell standards, establishes a new record for value. Full 100-ft. film capacity—Kodachrome or black and white. 20 mm. F 3.5 Taylor-Hobson Cooke lens, interchangeable with speed and telephoto lenses. Measures only $15\frac{5}{8} \times 4 \times 8\frac{3}{4}$ inches. Covered in pebble-grain or filigree fabric leather. Leather carrying case, \$5.50.

BELL & HOWELL COMPANY
1818 Larchmont Ave., Chicago; 716 N. LaBrea Ave., Hollywood;
11 W. 42nd St., N. Y.: 320 Regent St., London (B & H Co., Ltd.)

Established 1907

AMATEUR MOVIES

August, 1935
PRICE 25c

t his issue

Common Sense Filming
Tricks With Negative and Positive
Making a Tripod Head Yourself
Expedition Films
Cine Story Telling
... and other features



HOW TO GIVE YOUR MOVIES EVERYTHING A FILM CAN GET

AGFA 16 MM. Fine-Grain Plenachrome Reversible Film brings to your work an extra margin of quality that often distinguishes a photographic gem from "just another movie."

It gives you everything you could ask for in a general outdoor movie film. Wide latitude . . . effective anti-halation quality . . . complete orthochromatism . . . and a speed that, in daylight, is practically that of Panchromatic. And . . . because of its extreme fineness of grain . . . it brings to your screen the most com-

plete detail, even in large-size projection.

Insist on Plenachrome . . . get it from your dealer. You will quickly see why it meets the requirements of most exacting cinematographers. **Made by Agfa Ansco Corporation in Binghamton, N. Y.**

Agfa Ansco processing laboratories in the United States and Canada are located in New York, Chicago, Kansas City, Los Angeles and Montreal.

AGFA 16 MM. FILMS

Agfa Fine-Grain Plenachrome:
100-foot rolls \$4.50
50-foot rolls 2.75

Including processing and return postage.

Agfa Panchromatic Reversible:
100-foot rolls \$6.00
50-foot rolls 3.25

Including processing and return postage.

Agfa Fine-Grain Superpan Reversible:

100-foot rolls \$7.50
50-foot rolls 4.00

Including processing and return postage.

Agfa Fine-Grain Panchromatic

Negative:

100-foot rolls \$3.50

Developing not included.

200-foot and 400-foot rolls (laboratory packing) available.





AMATEUR MOVIE SECTION

Contents . . .

WHEN You Filter Use Cammon Sense by William Stull, A.S.C.....	350
TRAVELING Matte Tricks by Poul Berpee, A.S.C.....	352
PEOPLE Want to See His Films by Karl Hale.....	354
THESE Things Colled "Tricks" by Ed Ludes.....	355
MAKING o Tripod Head from Odds and Ends, by Louis A. Inzerro.....	356
CINE Story Telling Pays by Walter Blanchard.....	358
WHEELS of Industry.....	359

Next Month . . .

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the **AMERICAN CINEMATOGRAPHER**. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

• We will tell you something about editing. You have finished a full summer of shooting. There will be much footage on hand that will need cutting and editing. Editing is possibly more important at times than the actual shooting for the producing of interesting films. Of course a clever editor can make an interesting film out of practically nothing by the right kind of cutting and the proper editing and sometimes by the shooting of an additional scene or two.

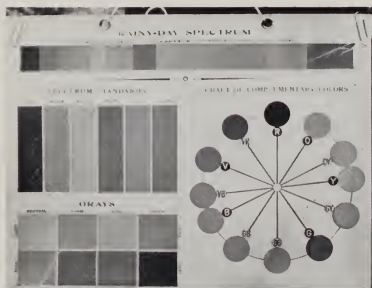


Fig. 1

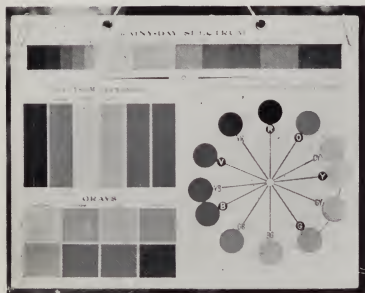


Fig. 2

"USE O Filter!" seems to be the favorite phrase of ninety-nine out of every hundred writers on amateur cinematography. Experts, semi-experts and quasi-experts alike, they all harp lovingly on the phrase, as though the use of a filter were a panacea for all the ills that beset amateur cinematography. It's all very well meant, but often rather confusing to the fellow with an amateur cine-camera. There seems to be such a bewildering array of filters—and each writer boosts his personal pet filters, regardless of what his fellow-scribes may favor. "Use a K-2!" adjures one—"Always a 'G'!" says another—"A 23-A is best!" advises a third—"A 2x for best results!"—"An X-2 is perfect!"—and so on, 'till the poor reader is as dizzy as a dervish. And as if that weren't enough confusion, the various makers of filters—especially those catering to the amateur trade—are equally vague in their methods of designating their products. Between them all, experts and manufacturers together, the poor movie-maker is so bewildered that, in self-defense, he throws away his filters and swears never again to wander into such a maze.

The most unfortunate part of the whole situation is the fact that filters, rightly used, can be of tremendous benefit to the photographer or cinematographer. But we must separate the bunk from the facts—substitute understanding and common-sense for ignorance and blind faith. We must

When You

know definitely what filters do, and why they do it, if we are to know when and how to use them.

A photographic color-filter is, in the first place, a bit of colored glass or gelatin placed between the film and the object being photographed. The most convenient way to do this is to fit the filter into a mount that can be attached to the lens. But what does this bit of tinted glass do—how and why does it work?

To understand this, we've got to know something about the nature of the films we use. To put it simply, a film—of any type—consists of a strip of celluloid which forms a base to hold the picture, and a coating of gelatin in which is mixed a rather complicated chemical compound of silver, called the "emulsion," and which is sensitive to light. The whole science of photography is based on the fact that certain chemical compounds containing silver are chemically changed by exposure to light. Even before the invention of photography itself, physicists observed this phenomenon; and they also observed that the action of light upon these compounds was in direct ratio to both the intensity of the light, and to the color of the light. Over a century ago, for instance, Sir Humphrey Davey noticed that such compounds were quite strongly affected by blue light, and hardly changed at all by red light. For over three-quarters of a century, photographic emulsions maintained this preference; then certain researchers discovered that they could produce emulsions which were not quite so color-blind, as they were somewhat sensitive to yellow and green light, too; optimistically, they called their new emulsion "Orthachromatic," from two Greek words signifying "true color." More recently, they have learned how to make their emulsions "see" red light, as well; and they called this product "Panchromatic," as it is sensitive to all colors.

Naw, translating these facts into terms of photography, an Orthachromatic film sees red as black, green as a very dark grey—almost black—yellow as a light grey, and blue as so pale a grey that it is virtually white. Not at all the way our eyes would see the same colors! A Panchromatic film, on the other hand, approaches the interpretation of our eyes much closer: the red is still the darkest, the blue is a moderately dark grey, and the yellow is quite a light grey. Fig. 1 shows how a typical Panchromatic film (Eastman regular Panchromatic) interprets a set of standard colors.

That is all well enough—but often we may want to change this for one reason or other. So we use a color filter, which, as its name implies, filters out some of the light. Since the filter takes away part of the light, without putting in anything to replace it, we must increase our exposure to compensate for the lost light. This gives the colors which pass through the filter a chance to work more strongly, and gives us a well-exposed picture, in which the weaker colors have registered more strongly than usual,

Filter Use Common-Sense

by
William Stull, A.S.C.

and are accordingly shown in lighter tones in the completed picture.

Since the very earliest emulsions were overly fond of blue light, the first color-filters were made of yellow glass, which—according to the color-density of the glass—held back the blue, and often the invisible, but photographically powerful, ultra-violet. These filters helped, for they made the blue parts of the picture darker, and showed the yellows more nearly as the eye sees them, as a light shade; they also lightened the greens somewhat. They act the same way, though to a different extent, with Panchromatic films. Fig. 2 shows the action of a medium yellow filter (the Wratten "K-2") with this type of film. You can see that the red is still very dark, and the yellow has become quite light, while the blue is noticeably darker; both orange and green are also appreciably lightened.

But, suppose we want either to make the reds lighter, or to darken the blues—what then? A deeper yellow filter, which, of course, holds back more of the blue light, will darken the blue—but it won't change the red very much. But, remember, the yellow filter made the yellow photograph lighter—so why wouldn't a red filter lighten the reds? It will! Fig. 3 shows what a rather heavy red filter (the Wratten F, No. 29) will do. The red has changed from black to a light grey; orange and yellow are almost white; green is slightly darker—and the blue has become a very dark grey.

Now, suppose we want to make the green lighter? Clearly, neither a yellow filter, nor yet a red one, will do the trick. What will a green one do? Fig. 4 shows us; it was made on the same film, with a medium green filter (the Eastman "X-2"). The reds have become much blacker, blue and orange are virtually unchanged, yellow is still quite light—and our green has at last become a very light grey.

From all of this, we can make out the following facts about filters, which can give us the key to almost any filtering problem:

YELLOW FILTERS: lighten yellows considerably, also orange and green to a lesser extent; darken blues, and leave red virtually unchanged.

RED FILTERS: lighten reds greatly, orange and yellow even more, darken blue strongly, and have relatively little effect on greens.

GREEN FILTERS: lighten greens considerably, darken red, and leave blue and orange unchanged, though yellow is lightened.

These facts apply to all filters of these respective colors, regardless of the make or name; however, the darker the color of the filter, the more pronounced its action—and incidentally, the greater must be the increase in exposure to compensate for the filter.

Now to apply them to practice!

Suppose we have a landscape, with nice, fluffy clouds against a blue sky in the background, and a girl wearing a yellow dress in the foreground. We want to make the girl stand out against the green grass, and we want the white clouds to stand out against the blue sky. Ordinarily, the yellow dress would be a little lighter than the green grass, but the intense blue of the sky would photograph almost white, and we would lose the clouds. So we can use a yellow filter: the girl's dress will become noticeably lighter, and the sky will darken enough to make the clouds stand out rather well.

But suppose we want to carry this farther: a red filter will darken the sky much more—even making it almost

Continued on Page 364

Fig. 3

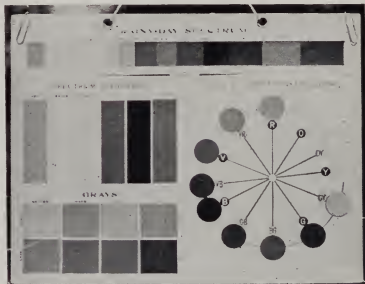
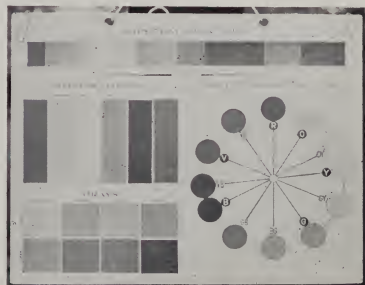


Fig. 4





This wipe off effect swings in from each corner as arrow indicates wiping automobile off with wooded scene.

WHEN the Children of Israel marched through the Red Sea in "The Ten Commandments," it was the "traveling matte" system of trick photography that made the shot possible. A miniature shot was made of the watery canyon through which they were to march; then a separate shot of the marchers, against a plain black background. From this latter negative, two special mattes were made, one, which we can call the "negative matte," in which the moving figures were sharply silhouetted against a clear blank field, and a complementary "positive matte," in which the field was opaque while the figures were clear. The final scene was made in two printing operations: first the background was printed through the negative matte, which left the spaces occupied by the actors unprinted; next, the figures were printed in through the positive matte, which shielded the background, but let the figures print through normally.

Of course, while a shot like that could conceivably be made in 16mm., it isn't quite the sort of thing that the average amateur would find useful in his own pictures. Besides, getting an opaque matte from an ordinary negative requires some rather tricky developing and intensifying. But the travelling matte idea can live up any home movie by putting in "wipes" and similar professional effects.

All that is necessary is a camera, a title-board, and a good printer. To get the best results, you really ought to do the laboratory work yourself; but as you will seldom be dealing with scenes more than ten feet long, this is a simple matter. Of course, all of this presupposes the use of negative-positive, though once you've gotten your hand in, you could make dupe negatives from reversal-film shots and use the dupe like an original negative.

To begin with, let's take the simplest sort of "wipe-off," and see how it's done. Scene A is on the screen; scene B appears at one side of the frame, and pushes A off to one side as scene B moves in. First, we make a matte. We set up the title-board with a WHITE card in place, and shoot the required footage of that; then we take a dead BLACK card and slowly slide it in from the side while the camera grinds; and we continue to photograph the black card until the footage for scene B has run out. This photographing, incidentally, is best done on positive film, which is cheaper—and more contrasty. For developing the matte, we need a developer which will give extreme contrast, so that the black areas will be absolutely opaque. I

Traveling

think Eastman's "D-9" developer is about the best. Here's the formula:

Stock Solution A.

Water (about 125° F.)	16	ounces
Sodium Bisulphite	3/4	ounce
Hydroquinone	3/4	ounce
Potassium Bromide	3/4	ounce
Cold Water to make	32	ounces

Stock Solution B.

Cold Water	32	ounces
Sodium Hydroxide (Caustic Soda)	1 3/4	ounces

Cold water should always be used when dissolving the caustic, as considerable heat is involved. Solution A should be stirred thoroughly when mixing with Solution B, to avoid precipitation. For use, mix equal parts of A and B, and develop two or three minutes at 65 F. Wash the film thoroughly between development and fixing to prevent stains and chemical fog.

So far, we have only one of the two mattes we need—the positive one, which protects the first scene. To make the negative matte, we simply make a print from the matte we've just made, and develop it in the same developer for maximum contrast.

In making our "wipe," the first thing to do is to determine a definite starting-point in the raw positive, in our two negatives and in our two mattes, notching the edges of the film at this point, so they can be registered easily. Then we place Matte No. 2—the "positive" matte—in the printer. Over this, we put the negative of the first scene and, last of all, the raw positive for the print. The matte must never be between the negative and the positive, for this would throw the print out of focus.

After the first scene is printed, the positive film is removed, and the "negative matte"—the one we made first, which begins totally opaque—is put in place. The matte, the negative of the second scene, and the positive film are aligned by means of the starting notches we marked, so that the two halves of the wipe are printed "in step with each other."

After printing through the second matte, the wiped scene is complete, and the positive is developed in the usual manner. The same succession of operations is, of course, followed in all types of travelling matte trickery.

Naturally, these basic wipes can be made in any direction—up, down, right, left or diagonally.

The next type of wipe is logically one made with two black cards which open or close like sliding barn doors, pulling apart from the center of the frame, or closing the same way. These wipes, too, can be made to go in any direction, and by varying the shape of the cards, quite a variety of effects can be had. For instance, if the two cards are cut with V-shaped notches in their edges, the effect will be a diamond-shaped iris-in or out.

Another interesting wipe, made with two cards, is made

Matte Tricks

with

16mm Negative

by
Paul Lerpee, A.S.C.

with the black cards dividing the frame either vertically or horizontally, and moving in opposite directions. If, for example, they move horizontally, the top half of the first scene will start wiping off at, say, the right side of the screen, while the bottom half will start at the left side, and the halves of the second scene will move in these two directions.

By using three cards, we can vary this to good effect. For instance, we can begin by having the left-hand third of the scene wipe upward; as soon as this is done, the center starts to wipe downward, after which the last strip wipes upward.

Another useful wipe is the type which moves fan-wise. The simplest of these is made with a single black card, which is pivoted at one corner of the frame (usually the lower right) and swung down into the picture. The true fan wipe is, of course, made with two black cards which are pivoted at the bottom center of the frame, and swung in or out together. If they swing in, scene 2 will wipe in from the edges, like a Japanese fan folding; if they swing out, scene 2 will appear in the center, and spread out as though the fan were opening. In the latter case, we would change our method a bit, beginning our matte shot with the black cards in place, and using the negative matte for the first printing.

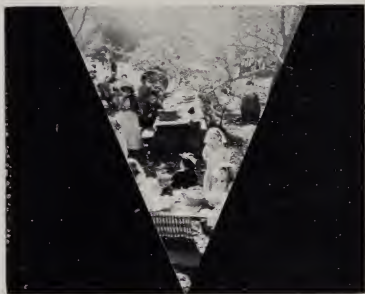
A variation of the fan wipe is to pivot the two cards at the lower corners of the frame, and work them in together. You could also pivot one card at the bottom center, the other at the top center, and revolve them in opposite directions.

If you want to carry this idea through to its logical conclusion, use four black cards, pivoting one at each corner of the frame, and swing all four of them in together. This is a bit tricky to do (it really takes two very cooperative people to manipulate the cards well), but it gives a very interesting effect.

The "melting wipe" has been used very interestingly in several professional films. It can be made quite easily, too, in 16mm. You simply place a pane of clear glass in front of the white card, with a little V-shaped trough along the

top. In this trough put some dark, rather heavy oil, and tilt the trough so that the oil runs out all the way across the top edge of the glass. Gravity will do the rest, for as the oil runs down the glass, it will run irregularly, and give you the melting matte you want. Two things you will have to watch out for: first, that your lights are set where they won't reflect in the glass or oil; and that the oil is black enough to be opaque. Sometimes you can use crank-case drainings from your car; otherwise, you can use any heavy machine oil. "Three-in-One" and similar household oils are too light; they would flow too quickly. Incidentally, if you can't get oil that is black enough, mix in some lamp-black.

Continued on Page 362



At top you have the first printing in which the city scene is being wiped off. The next photo is the second printing showing the matte opening and the country scene being wiped on. The bottom is the finished positive print with the city

scene partly off and the country scene partly on. Wipes are fanning from bottom center.



Photo courtesy Hancock Expeditions.

Six tons of fighting sea elephants caught by Swett's camera at San Benito Island.

People Want to See His

Films

TWO thousand people jammed the theatre. Three thousand more—outside—turned away for lack of seats.

On the screen, a motion picture. A silent film, without stars. A 16mm film. To be exact, a programme of educational 16mm pictures.

And audiences like them! Only this spring, in Quito, Ecuador, an impatient audience swept through a police cordon and rioted into the theatre to see the show. And while such a display of enthusiasm is rather above average, even for these films, more-than-capacity crowds are the rule wherever the Hancock Pacific Expedition films are shown.

At the same time, educational and scientific authorities—who do not always see eye to eye with lay audiences on such matters—bestow upon these films their highest approval. Some of the phrases used by distinguished and conservative educators would excite the envy of a professional press-agent.

I don't need to point out that such a combination is rare. Quite a few expeditions have brought back films of more or less scientific value; a few have brought back films that managed to tickle the public fancy; but in most cases, scientific accuracy is achieved at the cost of audience apathy—or vice-versa. The great majority, trying to please both factions, succeed only in displeasing both.

But when I asked W. Charles Swett, who photographs the Hancock Expedition films, what was the secret of making such remarkable films, he was quite sure there was no secret! "We film our pictures in a simple, straightforward fashion; edit them so that each picture tells its story completely; and then we try to present them as pleasingly as we know how," he told me.

"Captain Hancock's cruiser, the *Velera III*, was built especially for scientific exploration. On her cruises to the

seldom-visited corners of the Pacific, we carry with us specialists from the leading universities and museums of the country: on the last cruise, for instance, the Smithsonian Institution, the University of British Columbia, the University of Michigan, the University of Nebraska, and the University of Southern California were represented. They carry on their researches; I film their work and the results. Under such circumstances, one could hardly go wrong on the purely scientific phases of the filming.

"Due to the nature of our work, we've found it best to make our pictures with 16mm equipment. Most of the time, I have to work in places where there simply isn't room for a larger camera. Sometimes, in filming the seals at Galapagos, I have swum and waded a hundred yards or so, camera in hand, to reach a vantage point for a needed shot. A standard camera—even one of the so-called 'hand cameras'—would be utterly out of the question.

"Then, too, I often have to shoot quickly—or lose a scene I've been seeking for years. When two twenty-foot sea elephants are fighting it out a dozen feet from your lens, you haven't time to waste setting up tripods or plugging in battery-cables!

by
Karl Hale, A.S.C.

These Things Called "Tricks"

by
Ed Ludes



UNQUESTIONABLY the greatest ambition of the average movie maker after learning to shoot straight pictures is to master the art of "tricking." For no reason that can possibly be expounded there beats within his breast an insatiable desire to have his audience profess great curiosity about how it was done, and of course they will—if they're polite. That scene where Johnny, aged 5, seems to leap up onto a four-foot fence is certainly mystifying but no more so than the one where Sally's doll seems to get tired of sitting in one position and decides to put herself to bed. Ah, that one never failed to elicit the usual "for goodness sake! How'd you do that?" Great stuff! But positive proof that Mr. Mavieshooter is an amateur of the first rank—with the accent on the last word. Proof, you say? Well, let's recall some of the things most of us know, but seldom consider.

Perhaps one of the greatest examples of professional trickery was brought to the screen in "The Invisible Man." "King Kang" was another, more pretentious example, and, proving complete trickery in feature length productions isn't new, we submit "The Lost World."

"There," you cry, "doesn't that prove that tricks are in good taste?" We agree, of course. We're not trying to say that tricks should not be attempted. It's the MAN-NER in which they are presented that irks us.

Take the above mentioned pictures for example. In no instance did the story serve the trick. On the other hand, without exception, the tricks served the story. See the difference? Because these stories were so fantastic audiences could not help but wonder how they were photographed, BUT, (and this makes the difference), shortly after the picture started, the audience lost interest in the photography and became absorbed in the story. Theatre audiences would resent paying admission to see a lot of unrelated camera tricks as an evening's entertainment except, possibly, in the shartest of shorts. Tricks are nothing new to them and cannot hold interest for any length of time without story support. Your modern theatre audience (of which you are a part) is pretty blasé. Why, then, expect your guests to be different when seeing your pictures? They'll be polite, of course, but you can't amaze

them sincerely by pure trickery. So what to do about it—granting that tricks ARE all right IN THEIR PLACE? The answer is simple.

If Johnny MUST jump four feet and land on a fence give him a reason for doing it. Have the story concern some TARZAN PILLS which he accidentally finds as buried treasure in the back yard. With this as a reason, you can let him do any number of tricks—to the amazement of the rest of the neighborhood kids and the amusement of your guests.

Take the case of Sally's doll. A very interesting picture could be made out of some such idea as this:

Scene opens with Sally changing the dress on her doll. A Fairy Tale book is prominently by Sally's side (high-lighted, if possible, to make it prominent). She finishes dressing dolly and sets her at her side in the position in which the doll is to be left. Then she picks up the story book and starts to turn the leaves slowly and thoughtfully. Either dissolve, or cut to a closeup of Sally turning the pages. A very few feet of this then change the angle shooting over Sally's shoulder at the leaves of the book. Sally stops turning at a picture of a fairy touching a little girl with her wand (Cinderella and the fairy would do nicely). Allow time for the audience to grasp the idea then cut to a medium shot of Sally as before, with her still looking at the picture page. She looks up with a far away look and turning to Dolly says:

TITLE: "I wonder if Dolls have Doll Fairies . . ." Cut back to Sally as she finishes speaking then turns back to her book. She closes it. Change angle slightly and show Sally yawning. She turns to Dolly again and says:

TITLE: ". . . Goodnight, Dolly." A long shot gets Sally out of the picture. Then, with another doll dressed as a fairy, your animation begins and only ends when your patience is exhausted. But you have given a reason and story to your trick. AND THAT MAKES THE DIFFERENCE BETWEEN ENTERTAINMENT AND BOREDOM.

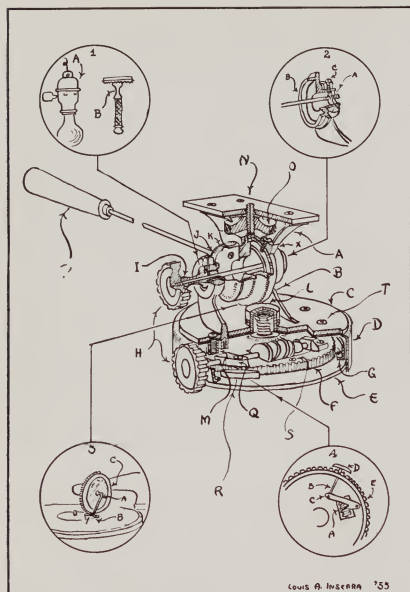


Fig. 1

BEFORE I begin describing the construction of this easily assembled amateur pan and tilt head, I want to state here that there is no more fascinating pastime for the amateur than that of building his own movie accessories, especially when the equipment is derived from unique odds and ends such as are easily found around the home and workshop. No special tools or materials are required for assembling such homemade articles because substitutions may easily be made for parts not easily available.

This pan and tilt head, the construction and assembly of which I am about to describe, has completely satisfied my most rigid requirements. It is rock-steady in performance and affords the photographer smooth working panorama and tilt movements with quickly available controls for locking the camera in any desirable position. Variable tension facilities make it possible for one to set this head to suit his own particular needs, and, as far as looks are concerned, it can be easily mistaken for a product sold at retail.

Aside from the commonplace tools found in the home workshop the following list of tools will also prove useful: one tap and die $\frac{1}{4}$ " U. S. S. 20, one tap and die 8/32 M. S. S., hack-saw, file and hand-drill.

Before mentioning the materials used, I want to impress upon my reader this fact, and that is, the following list of materials is a list of what I found most handy around the home. In building this tripod head you will find that substitutions for parts you may not possess are easily made.

Making

The following is a list of the odds and ends I employed in the construction:

1. An old brass gear-wheel (F).
2. The metal base of an old alarm clock (A).
3. An old phonograph pickup head (Insert No. 3).
4. An electric socket shell (top part only) and neck (brass) of a safety-razor (Insert No. 1, A and B).
5. An old-style Edison pickup device (Insert No. 2, B).
6. Nickel-plated rear bell panel of a discarded alarm clock (D).
7. Bakelite panel (C) and radio knobs (H).
8. Tire valve head and nut to fit.
9. Brass yoke joint found in junk yard (B).
10. Telephone knurled knob joint (O).
11. Aluminum (N) from an old frying pan.
12. Pancake flipper handle (P).
13. Miscellaneous small bolts as found in a boy's Erector set.
14. Pieces of scrap brass.
15. Heavy base of an old electric fan (E).
16. Rear panel of a clock for brake rim (G).
17. Cap from a phonograph needle supply well (K).
18. A worm gear from a boy's Erector set.

As my readers' equipment and materials will vary from the above list I will undertake only to outline the assembly of this tripod head rather than go into any detailed account. Alterations of design are easily effected as may be noted from the diagram. In fact, if desired, the whole pan locking mechanism (Insert No. 4) may be done away with if a gear wheel to suit is not easily found.

My first step was to construct the base of the head. In the center of the gear-wheel a hole was drilled large enough to admit a sawed-off tire valve-head which was bolted to the fan base weight E. The bottom of the base was then filed smooth. Insert No. 4 shows the construction of the panorama lock mechanism. D is a lead shoe well soldered onto the moving rod B. The brass arm C, actuated by the engagement of the tooth A and the worm gear, causes the brake shoe to work back and forth slowly and powerfully through a hole drilled in the side of gear-wheel E. This shoe locks the panorama movements when it presses against the rim G which is permanently bolted to the fan base E. After some experimentation, I found that a strip of adhesive tape placed on the inside of the rim G pre-

a Tripod Head from Odds and Ends

by

Louis A. Inerra

vented any slipping of the lead shoe-brake. A spring and bolt adjustment L controls the tension of the pan movement. This completes the actual construction of the base proper, and, as I stated before, the base construction can be simplified by doing away with the locking device entirely, although, in my case I found this feature necessary to good movies.

The construction of the tilt part of this tripod head offered a more complex problem than did the above base construction. After experimentation, I found that the safety-razor neck, I, fitted snugly into the threaded port of the electric light socket shell, J. Both of these parts are shown in Insert No. 1 at A and B. The cross-sectional diagram shows how these two parts were bolted to one of the brass uprights. Through the piece I a hole $8/32''$ was bored large enough to admit the shaft onto which was fastened a knurled knob.

The opposite end of the shaft was threaded to fit a small circular plug as shown at A in Insert No. 2. Insert No. 2 illustrates the old Edison pickup head permanently secured into a corresponding brass upright by the bolt C. Bolt C also permanently secures plug A. This completes the assembly of the uprights and fixed portions of the tilt assembly.

The revolving parts of the tilt mechanism consist of the cap of a phonograph needle well K bolted to the phonograph pickup. K fits snugly over the flange of J, thereby affording a perfect revolving friction movement. The top plate assembly was bolted onto these two parts, as shown at lead filling X. The top plate N was cut and shaped from an old aluminum frying pan. This was bolted to the clock base A in which a section was removed to admit the knurled knob O. The diagram clearly illustrates all of the above assembly.

The two brass uprights were bolted to the gear-wheel after a suitable position of balance had been determined. But before doing so, two openings were cut into the bakelite panel C and bell panel E so as to admit the two brass uprights. This constituted the outer covering of the panorama works and was fastened to the gear-wheel by four bolts well supported with four short pieces of brass tubing as shown at M. By this means the bell panel D just cleared the top of the worm-gear. A small perfume bottle cap, L, hid from view the nut and spring adjustment of the base. Underneath the base E a standard camera-mount thread was tapped into the small hole of the tire valve.

I have tried to make all the above explanations as brief and simple as possible because a careful scrutiny of the cross-sectional diagram will clear up any dubious or questionable points which may come up.

In conclusion, may I suggest that in going about constructing this amateur pan and tilt head, you first determine what available materials you have at hand and then conform your subsequent construction as close as possible to that as shown in the cross-sectional diagram.



At top the completed tripod head as described by Inerra. A professional looking job. At bottom the author using his tripod head with an 8mm camera.



Cine Story-Telling Pays

by

Walter Blanchard

UNTIL Gus brought out his projector, I had been having a thoroughly enjoyable evening. Gus and I are good friends; and he had been telling me about his vacation in Honolulu, which is a place I've always wanted to visit. Even when he threaded up the film, I still had some hopes, for if all he had been telling me was true, he had a chance for some marvellous shots.

As the projector started to hum, Gus began his monologue: "Here we are leaving part—that's Tillie, Uncle Ezra is just behind the lifeboat, and Aunt Maggie is just out of the picture . . . That's a little girl we met on the boat; she's awfully cute, even if she doesn't look it . . . This is Honolulu—I'm afraid I panned rather fast on that, but it's really very pretty there . . . Here we are at Kilauea—Yes, that's Tillie beside the car, and the other two are some school-teachers that we met in the hotel. I

wish you could see the fire-pits at night . . . Now we're at Waikiki beach—Tillie made this: don't I look funny? You ought to see the surfboard riders there; we made a shot of them, but it was on the end of the roll, and we lost it . . . Oh oh! That's where Tillie stopped me as I was about to shoot the hula-dancers! . . .

Ten reels of this, and a beautiful friendship had crumbled. I wanted to see what Hawaii was like—but all Gus showed me was a collection of miscellaneous shots of chance acquaintances that even he will never see again, and that nobody could possibly care a hoot about. Every time he had come to something that I really wanted to see, there would either be some unspeakable oaf clowning in front of the lens, blotting out the really important view—or Gus would apologize that he had run out of film just then. If he ever wants to show me any more of his films, he'll have to show me a Supreme Court order—and then call out the police.

And I'm not the only one who has suffered through such an evening. There are thousands of cinefilers like Gus at large throughout the world. No one is safe from them—or their miscegenate films.

And it is all so completely unnecessary! One-half of one percent of ordinary common-sense applied to the shooting of vacation-films would do the trick.

After all, why do we make such pictures? Isn't it because we feel that the cine-camera can tell the story better than we can ourselves? Then—why not let it tell the story properly?

But don't get me wrong: when I say "story," I don't mean that home-movies should all be built around an involved plot, with heroes, heroines, villains and the conventional fadeout climax! That isn't it, at all. When I tell you, "I visited Yellowstone," and then proceed to describe the geysers, the bears, and the other things I saw, I'm telling you a story; if I'm a good story-teller, my story can be just as entertaining as any fictional romance.

One of my friends, who is a famous Cinematographer, is fond of saying, "Art is not what—but how." In other words, it is not so important what sort of a story you tell with your cinebox as how you go about telling it.

And there is a story in everything that is really worth filming. In vacation-films, it may sometimes be where you go, or it may be what you are doing. In either case, the way to put the story on the screen is to decide at the start whether the story is a "where" story or a "what" story—and then to shoot your scenes accordingly. In a "where" story, the "what" is of very minor importance—and vice-versa.

Gus' trip to Hawaii was a "where" story if there ever was one. Therefore, to tell it properly, he should have let his camera show us Hawaii—poking its lens into all the unique beauty-spots, and showing us, not the tourists (who are the same everywhere), but the Hawaiians: how they live, and dress, and dance; how they eat poi and raw fish and ride surfboards. He can film his wife and the rest of the tourists at home; if he simply can't avoid making a few shots of these pests while he is vacationing, he can at least have enough respect for good cine-narration to cut them from the reel before showing it to anybody.

Now—since Gus and his films are both imaginary—let's suppose he and his camera went on a fishing trip somewhere. In that case, his story would be a definite "what" story. Where he went wouldn't be nearly so important as what he did. If you were to ask him questions



WHEELS OF INDUSTRY

New Lights

● Bell & Howell Company has assumed exclusive photographic market distribution of the Aplanatic Reflectors for photoflood bulbs which are manufactured in Los Angeles and used extensively in the Hollywood studios. The reflectors distributed by Bell & Howell are small, compact duplicates of the big studio reflectors and comprise a complete line of the sizes and types best suited to amateur movie making and still photography.

The mirror-like chromium surface of the Aplanatic Reflectors consists of many facets, each of which reflects the lamp's filament, with full intensity, toward the subject. The degree of concentration or spreading of the light beam may be controlled by moving the reflector backward or forward on a sleeve encasing the lamp socket.

Reflector bowls $5\frac{1}{2}$ inches and $7\frac{1}{2}$ inches in diameter have wire clamps inside the bowl which slip over a lamp bulb in existing home fixtures. These are called Snap-on Reflectors.

There are Hand-Clamp Reflectors in three sizes—7½ inches, 8½ inches, and 12 inches. A powerful, rubber-covered, spring hand clamp holds the reflector firmly to a chair back, table edge, or window sill. A ball-and-socket joint between clamp and reflector permits the lights to be directed as desired.

The three reflectors listed above may be had with folding stand rather than hand clamp. Stands for accommodating one and two reflectors are offered.

New Exposure Meter

● A new photo-electric exposure meter in which sensitivity to light has been increased more than three times over previous models has just been announced by the Weston Electrical Instrument Corporation, Newark, N. J. It will be on the market within the next few weeks, according to present plans, and will be sold at a lower price.

The new meter extends the determination of accurate exposure settings independent of eye-judgment to the lower brightness levels commonly encountered in photographing interiors, in home photography under artificial light, and in candid camera work. The widened scope

of photographic possibilities resulting from the use of super-sensitive film and high-speed lenses, using such settings as F 2 and 1/10 second, is matched by the light-sensitivity of the new instrument. However, it is said to be more compact and more simple to operate than those previously available.

A feature of the meter is the redesigned light-value indicator, which accommodates on a single scale a range of brightness values in which the maximum indication is 4000 times the minimum. This is accomplished without sacrifice of legibility by spacing out the divisions at the lower end of the scale where exposure determination is most critical. The movement of the needle over the scale is of sufficient magnitude so that it need not be held close to the eye.

Universal application of the meter to all types of still and motion picture cameras is provided by means of an open-face reference dial including aperture settings from F1.5 to F32, shutter speeds from 1/1000 second to 100 seconds, and a range of film speeds from 1 to 64 (Weston rating). Simplified arrangement of the new dial gives a more rapid and convenient indication of "normal" exposure. However, a complete indication of the film-density range available for any particular photograph is also shown at a glance, so that the photographer who wishes to depart from "normal exposure" to meet exceptional light conditions or to distort tone values for artistic effect has all the information required.

Light entering the meter is restricted to that within the usual lens angle by means of a new type of cell window of glass in the form of multiple lenses, a method which transmits a considerably greater proportion of the light than is possible with the baffles previously standard for this purpose.

The photo-electric cell used in the new meter is of the same "dry plate" type first adapted to the photographic exposure problem by the Weston organization. The increased sensitivity of the instrument has been obtained without sacrifice of permanent electrical characteristics, according to the manufacturers, and the reaction of the cell to light of various wave lengths is such that exposure data for color photography is accurately indicated.

Prices Reduced

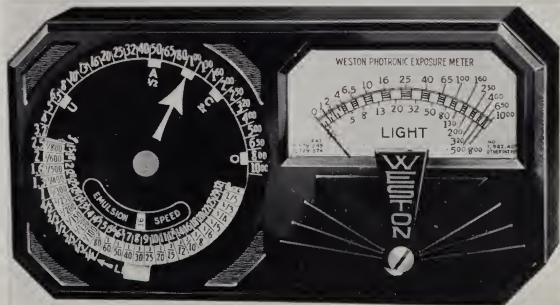
● It is announced by Victor Animatograph Corporation, that the following projector price reductions will become effective on August 1, 1935.

Victor Model 10 Regular (500-watt), which previously listed at \$149.50 with No. 9 carrying case, will be reduced to \$132.50 complete with No. 8 Elite center-opening case.

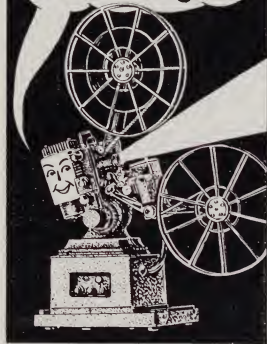
Victor Model 20 Super-HiPower (750-watt) which heretofore listed at \$187.50 with No. 8 case, will be reduced to \$148.00 with No. 8 case.

These reductions have been attributed to a tremendous increase in demand which has made it possible to effect substantial reduction in production costs.

Continued on Page 364



Bass is Headquarters for Projectors which Talk! and Sing!



16MM SOUND-ON-FILM PROJECTORS

Here **SOUND PROJECTION** is fully understood and **SOUND ADVICE** is yours for the asking. Your old apparatus taken in exchange at best appraisals.

AMPRO SOUND includes the new RCA amplifier, 15 watt, inertia balancer, 750 watt, powerful, clear, complete at \$650.00
BELL & HOWELL FIMOSOUND—Several models, splendid tone, exquisite construction, complete ready to use, priced from \$500.00 to \$700.00

DEVRY 16mm SOUND-ON-FILM—Powerful, brilliant. A thoroughly professional outfit. Complete. \$525.00

RCA New Model M1-891 with its 750 watt bulb, exquisite fidelity of tone. The most compact instrument made. Price complete with amplifier. \$575.00

VICTOR ANIMATOPHON MODEL 24B—A powerful full tone instrument with 750 watt bulb, complete with all the Victor features, with amplifier, ready to use. Price \$575.00

HOLMES 16mm SOUND-ON-FILM—Unusually fine mechanism, no claws, remarkable fidelity of tone. Can use 1000 watt or smaller bulb, complete with powerful amplifier, ready to use. \$575.00

The Bass Sound-on-Film Library is growing daily. Service within radius of 1000 miles of Chicago.

Write for further information on any or all of the above instruments. Catalogs free on request. Also Bass Rental Catalog is yours for the asking.

BASS
CAMERA COMPANY
179 W. Madison St., Chicago

Camera Headquarters for Tourists

PEOPLE WANT TO SEE HIS FILMS

Continued from Page 354

"There is one fortunate circumstance, though, in the fact that most of our films are made in the Galapagos Islands. There, the wild life is not only extremely interesting to the biologists, but it hasn't been spoiled by too much contact with men. The animals (and birds, too) simply don't know what fear means: we can walk right among them, and make pictures to our heart's content. If we get too close, they simply move a foot or so to let us by! As a result, I make most close-ups of the seals, sea elephants, and so on, with a 15mm wide angle lens. Even for the most difficult shots, such as scenes of seals or sea elephants fighting in the water, I have never used a telephoto lens; I have a nice collection of them, but the longest I have ever had to use is a simple 2". I don't believe in tele-lenses for this work, anyhow; they make you use a tripod, sacrifice depth of focus, and restrict you in a dozen ways you can't put up with if you want the best pictures.

"As to film, we use regular reversal film, and when we want prints, we have a duplicate negative made, and print from that. The latitude of reversal stock, combined with the marvellous control the better laboratories have in their processing, have proven invaluable to me, for many of my most important scenes have necessarily been made under the most unfavorable light conditions. Often I'll catch a shot I've been trying to get for three or four years—a shot that must be made in one special way, or else be worthless—under conditions where only the finest of film and the best of processing can turn the scale from failure to success.

"When it comes to editing the film, we have to be very careful—and merciless. Each of our pictures has a definite story to tell: the capture of a sea elephant; birds which cannot fly; snake-headed lizards; catching the huge 'sea devil,' or manta ray; the birth and education of a seal. Each must tell its whole story in one reel—400 feet. It must tell that story accurately, completely, and interestingly. There's always so much to tell that we can't waste even a foot of film for anything that isn't germane to the story. That means we must disregard all temptations to include this shot or that for mere prettiness, or because it may be of personal interest to us.

"There, I think, is one of the greatest faults of most travel and semi-educational films, whether professional or amateur. It's quite understandable, too: if you've photographed the picture, it's awfully tempting to include shots that are actually unimportant, simply because they are your pictorial pets, or because

you remember how you sweat blood to get a difficult scene! It is really an advantage to have someone else edit your film. When it comes to editing our pictures, while I participate, Emory Johnson, who was one of the most skillful of silent-picture directors, is officially the Film Editor. He can keep his heart story where I, who filmed the scenes, couldn't! After we feel the picture is completed, it must still pass inspection by a jury of the expedition's scientific experts.

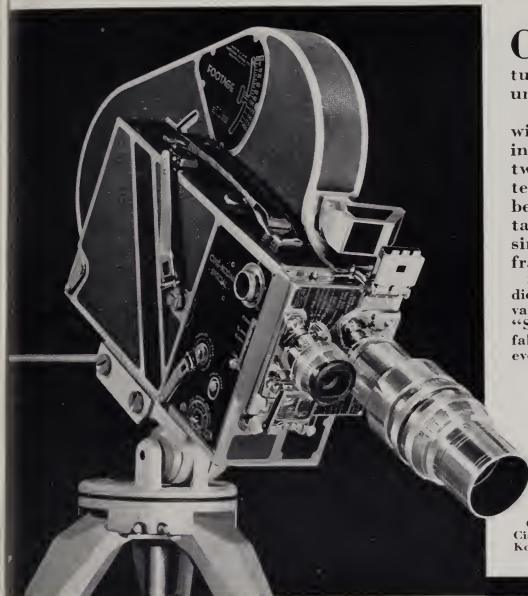
"As a rule, our films are first shown with only well-made main titles, for they are shown with a lecture in which the speaker explains things as the film progresses. This not only gives us the assurance that the films will be properly presented, but also gives us a more intimate understanding of how audiences react, and what explanation they want.

"In building our programs, which are presented without charge, we try to make them both entertaining and instructive. Wherever possible, the Hancock Expedition films are presented with the Veler Ensemble, a musical organization composed of Captain G. Allan Hancock, as leader and cellist; John Garth, pianist and entomologist; Arthur Jensen, violinist and collector; Sterling Smith, flutist and collector. They present forty-five minutes of classical and semi-classical music—ensembles, solos, duets and trios. After this comes forty-five minutes of pictures; three or four different subjects, usually arranged on a single 2,000-foot reel. In this way, we provide a really well-balanced programme that doesn't try to force information down the audience's throat.

"Completely titled prints of most of our films are also available to schools and educational institutions for the bare cost of printing. The only proviso attached to this by Captain Hancock is that such prints must not be exploited commercially."

When Swett showed me some of his films, I had no trouble at all in understanding why there are more requests for these films than can be complied with. Based on better than average technique, they are not mere sugar-coated "education"; they are remarkable entertainment. One film, showing the birth and education of a seal, achieved what no other medium could, in presenting the birth of a seal in a wonderful, yet altogether natural way which robbed that delicate subject of all its unapproachable phases. There was, incidentally, not a single human shown in the entire reel—one was never for a moment conscious of their absence, or bored by being "taught something about seals." Another reel, showing the capture of a two-ton sea elephant, contained some of

CINÉ-KODAK Special



CINÉ-KODAK SPECIAL, as supplied, contains a host of exclusive and unique picture-making refinements that stamp it as the unchallenged leader of the 16 mm. field.

To list but a few: Ground-glass focusing with all focal length lenses, adjustable-opening shutter, reverse take-up, mask slot between lens and film, revolving lens turret, interchangeable 100- and 200-foot film chambers, speed control dial offering a choice of taking speeds from 8 to 64 frames per second, single frame release button, one- and eight-frame hand cranks.

Surely, here is a camera coupling a wide range of studio effects with 16 mm. economy. Yet, so many and varied are the fields which have enlisted the aid of the "Special," that the instrument shop in which it is fabricated has introduced several new accessories to even further widen its usefulness.

Some of these are shown and described below. Others, highly specialized, do not warrant adoption as standard accessories. Rest assured, however, that either the basic model or an adaptation will perform any task of picture making within the scope of 16 mm. cinematography. You are invited to submit specifications.

Free—AN INTERESTING BOOKLET

Generous in size, copiously illustrated, a copy of "Presenting Ciné-Kodak Special" is yours upon request. Write to Eastman Kodak Company, Rochester, N. Y.

THE OPTICAL FINDER The Optical Finder corrects parallax, can be calibrated for all focal length lenses from 15 mm. wide angle to 6-inch telephoto, shows the correct field from infinity down to two feet. Price on request.

ELECTRIC MOTOR DRIVE By means of this device you may set the "Special" to expose 1, 2, 3, 4, 8, 16, 24, 32, 60, or 64 frames per second by electric current supplied by either D.C. or A.C., 25- to 60-cycle, 100- to 125-volt lines. Price on request.

ACCESSORY LENSES Besides the standard f1.9 lens for the "Special," there are available a 20 mm. f3.5 lens, 15 mm. f2.7 wide angle lens, and a new series of four telephoto lenses. Due to the introduction of an adapter, made in three types—for the "Special," Ciné-Kodak K, and for 16 mm. cameras using the standard thread—these telephoto lenses are interchangeable on most 16 mm. movie cameras. The minimum focusing distances embossed upon them can be about halved by an exclusive and most important feature available to "Special" users. By removing a red stop screw the lenses can be screwed out so that larger images may be obtained at closer working distances—and when this is done only visual focusing with the "Special" reflex finder should be employed. Here are the reduced distances and widths of field obtained.

Lens	Minimum Focusing Distances	Width of Field
2 -inch f3.5.....	13 inches.....	17½ inches
3 -inch f4.5.....	24½ inches.....	29¼ inches
4½-inch f4.5.....	39½ inches.....	33½ inches
6 -inch f4.5.....	57 inches.....	23¼ inches

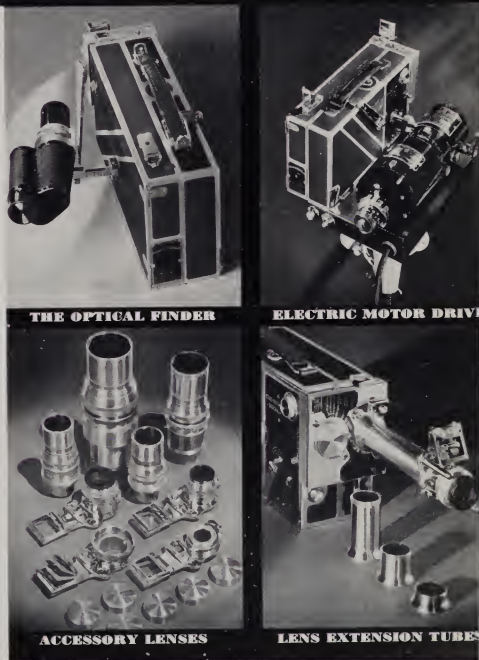
The prices of these new design telephoto lenses, exclusive of adapters (which are priced at \$6.50), are \$38.50 for the 2-inch f3.5 and the 3-inch f4.5 lenses; \$53.50 for the 4½-inch f4.5 lens; and \$78.50 for the 6-inch telephoto lens—showing the substantial saving effected by the introduction of this independent adapter lens system.

LENS EXTENSION TUBE OUTFIT Specialists in certain fields will desire to work at still closer ranges without enlisting the aid of microscopes. To fill this need the Lens Extension Tube Outfit has been introduced. Here are the minimum fields which can be covered by using these tubes:

Lens	Minimum Width of Field
1 -inch f1.9.....	.047 inches
2 -inch f3.5.....	.108 inches
3 -inch f4.5.....	.162 inches
4½-inch f4.5.....	.243 inches
6 -inch f4.5.....	.324 inches

The Extension Tube Outfit is sold as a complete unit—flange, and four tubes of varying lengths. Price on request.

Eastman Kodak Company, Rochester, N. Y.



THE OPTICAL FINDER

ELECTRIC MOTOR DRIVE

ACCESSORY LENSES

LENS EXTENSION TUBE

A NEW ADDITION
TO
FOTOSHOP CINE FILM

—8—
ULTRA RAPID
PANCHROMATIC 16mm FILM
\$4.25 100 ft.

We guarantee this film as fast under all conditions and as fine-grained as any supersensitive 16mm film now being sold.

OTHER FILMS as low as \$2.19 100 ft.
All prices include processing.
Send For Circular.

FOTOSHOP, INC.

136½A West 32nd St., New York City

SUMMER SPECIALS

Why Be Sorry Too Late?

100-ft. Negative from your 16mm
Positive \$ 3.00
100-ft. Pos. from 16mm Neg. 2.25
400-ft. Comedies 10.00
Let us make copies from your precious
films before they are ruined in projection.
We make and insert titles.

CINEQUE LABORATORIES

123 West 64th St. New York, N. Y.

HUGO MEYER *Cine*
SPEEDS 1/15 TO 1/55
LENSES

HUGO MEYER & CO.
245 W. 55 ST., NEW YORK

Morgan Camera Shop

Fine Grain Developing with Supersop
on all miniature film.

Try our Mail Service

Write for Morgan Camera News

6305 Sunset Blvd., Hollywood, Calif.

BOOK of TITLES—50 Cents

1052 captions written by professionals.
Humor and wit for your old scenes.
A wealth of suggestions for your new
films.

Full length 16mm titles .18 cents each
If your dealer does not carry the book,
write

CINEQUE LABORATORIES

123 West 64th St. New York, N. Y.

RELIABILITY . . .

Just as a chain is no stronger than its
weakest link, a product reflects the
good or bad qualities of its maker. The
manufacturers of Kin-O-Lux pride themselves
on a sincere and unflinching devotion
to the cause of Better Cinematography.

No. 1, Green Box, 100 ft. \$3.00
50 ft. 2.00
No. 2, Red Box, 100 ft. 3.50
50 ft. 2.50

Prices include
Processing, Scratch-
Proofing and return
postage.

Booklet on Request

KIN-O-LUX, Inc.

107 W. 40th St. N.Y.



the most thrilling shots imaginable—magnificent close shots of a battle-royal between two of the beasts. In this film, of course, the human element was evident: but although the human cast included scientists of world-wide renown, not a single scene called attention to them as personalities. Animate instruments in the capture of the sea-giant, yes; but as conscious actors, never. There was not one close-up!

"Don't you ever make intimate shots of the members of the party at play?" I asked.

"Of course," was the reply. "But we cut them out and make a separate reel for our personal pleasure. We may matter to ourselves; but audiences at large—what do they care about who we are, or what we look like? All that matters is what we do!"

Traveling Matte Tricks with 16mm Negative

Continued from Page 353

If your camera is equipped with a single-frame stop-motion movement, you can make a number of other interesting mattes by animation. Ordinary 16mm cameras can often be persuaded to expose only one or two frames at a time; so if you have a very light touch on the trigger, you may find it possible to make some of these mattes even without a regular single-picture movement.

First of all is the disc effect. This is most easily done if the title-board can be stood on end, so that the card is level. Take a number of black cardboard discs, and, when you have made the required footage of the white card, stop the camera, and drop one of the discs in. Take a few more frames, stop again, and drop another disc in—and so on until the entire field is blanked out by the overlapping discs. Don't bother to put the discs in regular order: half the charm of this effect is through the irregular appearance of the discs, scattered all over the field. You can do the same thing with cut-out musical notes, or any sort of cut-out shape that fits the picture.

Another stop-motion matte is the venetian-blind effect. This is made by beginning with half-a-dozen or more black lines across the white frame. After two or three frames, the camera is stopped, and the lines widened a bit. As the lines grow wider and wider, scene 2 will spread itself into the picture exactly as though you were looking through a shutter that was being opened.

You can also divide the frame into quarters, and animate alternate squares in, checkerboard-fashion. For instance, say you animate in the upper left and lower right quarters: the left one would animate up from the center, while the right one animated down. When they reached the edge of the frame, the animation could continue horizontally—to the right above, and left, below, until the whole field was covered.

A spiral wipe can easily be made this way, too. Start with a single line running from the top of the frame straight down to the center. Then widen this, spreading radially from the center, until you have carried the matte completely around, blocking out the whole field.

Fan wipes, incidentally, can be made by animation in this way, too.

In a recent production for which I made wipes, I had this problem: In scene 1, the movement of the people was from left to right; in scene 2, the movement was from right to left. If I made a straight wipe, these movements would conflict. How was the transition to be made pleasing? I did it by animating a straight push-off wipe from left to right—but only up to the middle of the frame. Then I revolved the matte front (by animation) around the center of the frame—and finished the wipe from right to left.

In Mae West's "Belle of the 90's," I used a rotary wipe to go from a close-shot of a riverboat's paddle-wheel to the next sequence. Again, the matte was made by animation. Four dark bars animated in, radiating from the center of the frame. These were progressively animated larger and larger, until the scene was wiped off. At the same time, the bars revolved clockwise around the center of the frame. This was done by revolving the entire card around as the bars animated. To simplify the job, you could mark calibrations for the animation of the bars, just outside of the camera-field, and—with the whole layout done on a large disc, you could mark calibrations for revolving the whole. The two sets of calibrations need not be the same, so that the two movements—the turning of the wipe, and the growth of the dark bars—could be made at two different speeds. Simply enlarge the bars one calibration each frame, and at the same time, revolve the whole card one degree. In one of our recent films, we used this type of wipe as a transition between a shot of a girl making a phone call and the party at the other end of the wire: making the wipe from a close-up of the girl's finger dialing the number; as the dial spun, the wipe started and revolved with it.

Especially with these more complicated wipes, it is a very good idea to keep your original two mattes as "master negatives," and to do your printing from dupes of them. In that way, you can cut your mattes to length, secure in the knowledge that if you make a

Walt Disney

who KNOWS his CAMERAS.

Praises his VICTOR

Mr. Disney now owns two VICTOR CAMERAS, the first of which he has used for four years. With him, when he sailed recently on the new French Liner, Normandie, for Europe, was his New VICTOR MODEL FOUR*. You, too, will find satisfaction in VICTOR ownership . . . and nowhere else will you find Values as Attractive!

Right: Mr. Disney's 4-year old VICTOR being used to record the actions of live penguins prior to the making of the Silly Symphony, "Peculiar Penguins"



* MODEL FOUR is the latest addition to the VICTOR CAMERA line. With VISUAL FOCUSING, TURRET FRONT, 5 SPEEDS and many other attractive features, it is a REMARKABLE VALUE at only \$137.50 (with F 2.9 Focusing Mount Lens). . . The Popular 5-speed, VICTOR MODEL 3 CAMERA at \$72.50 (with F 2.9 universal focus lens) is without equal in the lower price range. . . The All-Feature VICTOR MODEL FIVE has ALL Features of the Model Four, plus REVERSE ACTION. With F 1.5 speed lens, \$200.00. Ask YOUR DEALER to show you these and other outstanding VICTOR 16 mm. Equipment Values. Write for free illustrated literature.

VICTOR ANIMATOGRAPH CORPORATION
DAVENPORT, IOWA

Branches: Chicago . . . New York City . . . Los Angeles



WORLD'S FINEST 16MM MOTION PICTURE EQUIPMENT



May 31, 1936

Victor Animatograph Corp.,
Davenport,
Iowa.

Gentlemen:

I have used your Victor motion picture camera consistently since the year of 1931, and have found it to be more than satisfactory in every respect. I have made many peels in my home and on trips which have great sentimental value to me.

I take great pleasure of advising you of the above.

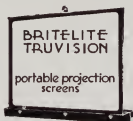
Sincerely yours,

Walt Disney
Walt Disney

W-111

The PERFECT SCREEN for YOUR PERFECT SHOTS

Beaded Screen De
Luxe "A" 30x40"
\$15.00 List. Other
sizes in proportion.



BRITELITE-TRUVISION For Perfection in Projection

If you are back from camp or cruise—from mountains and seashore, Mr. Movie Maker, with records of your summer activities, you will want to present them in a manner to enhance their perfection. A Britelite-Truision screen, the ultimate word in projection quality, offers its user the utmost in performance, whether his medium is the silent film, the new talkie, or Kodachrome.

Britelite-Truision Screens are made in various other models.

At all Dealers . Literature on Request

**MOTION PICTURE SCREEN &
ACCESSORIES CO.**

526 West 26th Street New York

GOERZ

KINO-HYPAR for COLOR

The careful design and high chromatic corrections of these renowned lenses yield the ultimate in performance in the Movie Maker's Kodachrome requirements. They give microscopic definition on the film with the result that you are assured brilliance and crispness in projection.

24-Page Catalog of Goerz Lenses and accessories will be sent on request.

C. P. Goerz American Optical Co.
317 East 34th St. New York

16mm PRINTER 16mm

Professional Type for SOUND and PICTURE

A continuous printer—Perfect Contact—steady, Semi-Automatic light change—motor driven.

Model A.....\$295
Model B.....\$175
16mm Light Testing Machine to determine Printing Light intensity \$145

Fried Camera Co.
6156 Santa Monica Blvd.,
Hollywood, Calif.

WE WANT TO BUY

Sound-On-Film, Silent and Sound-On-Disc 16mm films.

Submit your list. State lowest price acceptable, or let us quote our bid.

Visual Instruction Supply Corp.
1757 Broadway Brooklyn, N. Y.

mistake, you won't have to do all the work over again—and you'll always have the master negatives for further wipes later.

In making these mattes, it helps, too,

if you remember that normally the black cards represent scene 2, and the movement of the cards (or black animations) shows which way scene 2 is going to appear in your completed transition.

WHEELS OF INDUSTRY

Continued from Page 359

New Titles

● It is announced by Bell & Howell Company that a new line of Title-Craft titles is available for movie makers.

These new titles are called "Title-Craft Junior" and are particularly attractive and legible.

They have the following distinct advantages: a choice of many beautiful and appropriate all-over backgrounds at the same price as for black backgrounds; careful arrangement of type matter for artistic appearance and legibility; many pictorial backgrounds available at only ten cents more than the minimum price; fine technical quality in filming.

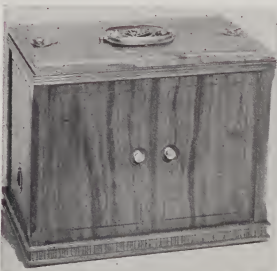
Specimen "Junior" titles or a complete set of the many available backgrounds may be seen at most photographic dealers; also a demonstration film composed of eight or ten titles.

The hand-set Title-Craft titles have been extremely popular, and this new series will undoubtedly meet with equal favor in the lower price field.

Victor Cabinet Projector

● Victor Animatograph Corporation has just introduced a new, enclosed, cabinet-type of silent 750-watt projector. It is believed that the greater eye-appeal and unusual convenience of this unique new projector will win popularity. It is to be known as Victor Model 21 and will probably list at \$185.

Although the projector is extremely compact, measuring only 8 1/2"x13 1/4"x16 1/4", it is equipped with 1600-ft. reel arms. When the full film capacity is utilized, a one-hour presentation may be made without stopping to change film. Smaller reels may be used if desired.



Among the Model 21's standard equipment items are Pilot Light, Rapid Power Rewind, quick, positive Tilting Device, and a new "Swing-out" type of Lens Mount with side framer, which greatly facilitates threading, framing, and cleaning of the film channel and aperture plate.

The cabinet is finished in natural walnut and appointments are in Antique Silver. Projector is entirely enclosed by the case during operation.

First deliveries will be made around August first.

Common-Sense Filtering

Continued from Page 351

black if the filter is dense enough—so the clouds will fairly leap out. The yellow is lightened rather more—even excessively. And, on the other hand, the flesh tints of the girl's face, if we use a heavy filter, will become unnaturally white.

Now let's try a green filter: the yellow will still be rather light; the face-tones will be little changed, except for perhaps a slight darkening; the blue will be virtually unaffected—so we will lose the clouds; but the green foliage will be decidedly lighter.

Briefly, to lighten yellow, and darken blue, we use the yellow filter.

To lighten red and make blue very much darker, we use a red filter.

To lighten green and darken red, we use a green filter.

In other words, the filter lightens its own color, and darkens its complementary colors, and the degree of effect is in ratio to the darker or lighter tint of the filter-color.

The majority of filters sold for amateur use are yellow ones. Too many of them are designated simply by the multiplying factor used to determine the added exposure necessary: that is, 2x, 4x, and so on, which really means 2 times, 4 times, etc. The Wratten yellow filters include the K1, K2, and K3, with also the "Aero 1" and Aero 2, which are slightly tinged with greenish-yellow, designed especially for penetrating the light haze that is always visible from the air.

The principal red filters are the Wratten 23A, A No. 25, and F No. 29. Several of the leading makers of amateur

Ready
AUGUST
1st

THE
new **WESTON**
Universal Exposure Meter
FOR INDOOR AND OUTDOOR USE!

Increased Sensitivity . . . sensitivity increased over three times, making it a *practical* and *dependable* meter for indoor as well as outdoor use.

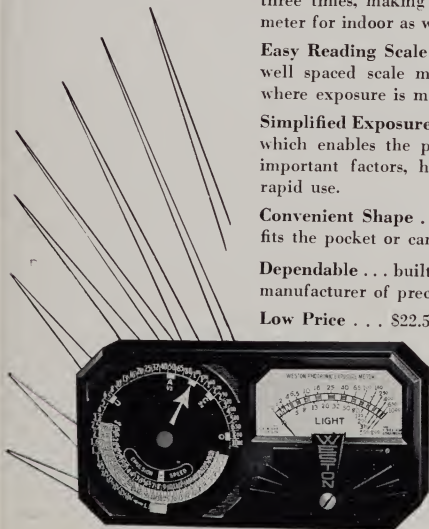
Easy Reading Scale . . . all readings on one scale; well spaced scale markings on lower light values where exposure is most critical.

Simplified Exposure Dial . . . this exclusive feature, which enables the photographer to coordinate all important factors, has been re-designed for more rapid use.

Convenient Shape . . . easy to carry and to use — fits the pocket or camera case.

Dependable . . . built by Weston, the world's largest manufacturer of precision indicating instruments.

Low Price . . . \$22.50.



cinemachinery, including Bell & Howell and Victor, have red filters which they designate simply by the multiplying-factor, as, for example, "4x Red."

The outstanding green filters are the Wratten "B" filters (especially No. 56B) and the new "X" filters. The latter were lately devised for special work in professional still photography, but have become rather popular for amateur photography and cinematography. They must not be confused with the ordinary yellow filters designated by a number followed by the letter x. Strangely enough, the X1, if designated by its multiplying factor, would be called a 5x green!

From all of the above, you can see that for most general use (assuming, of course, Panchromatic film) a yellow filter is indicated except at such times as the specialized effects of a red or green one may be demanded. Therefore, it is good policy to put such a filter—say a Wratten K2, or any good 2x or 3x yellow filter—on your lens and leave it as standard equipment. When you want particularly striking cloud-effects, with the white clouds standing strongly against a dark sky, use either a heavier yellow filter, an orange filter (such as the Wratten "G," which is intermediate between the yellows and reds), or a red filter. As for the green filters, they are best used only when you have a good deal of green in the picture—grass, foliage, etc.—and you want to lighten it.

And—as one last hint—don't expect a filter to do the impossible! Your photography must be good in itself, or no filter in the world can improve it. Moreover, especially when you are shooting clouds, the atmospheric conditions must be right. We normally think of the sky as being blue—but often, especially in dry, dusty weather, the sky near the horizon is really a sickly greenish blue, which no filter will darken satisfactorily. Be sure that your sky is a good, clear, strong blue if you want the best filter-effects on cloud scenes!

Cine Story-Telling Pays

Continued from Page 358

about this trip, you would want to know, "How many fish did he catch? What kind? Were they good sport? How did he catch them? How did he live—in a hotel, a cabin, or did he camp under canvas, far from civilization? How did he get there—by boat, by car, or by pack-mule? Who went with him? Did he know where to go, or did a guide go with him?"

You can answer every one of those questions in film. Done properly, the answer will not only be interesting to your friends and to fishermen in general, but to the same audiences who snoozed through your last vacation epic.

CLASSIFIED ADVERTISING

Rates: Seven cents a word. Minimum charge, one dollar per insertion.

FOR SALE—MISCELLANEOUS

35mm NEGATIVE fresh Eastman and Dupont panchromatic—supersensitive grayback, \$2.50 per hundred feet, 100 ft., daylight loading rolls, \$2.75 each, Leica rolls 36 exposures, 10% discount on all orders accompanied by this coupon. PACIFIC COAST RAW FILM CO., 1555 No. Vine St., Hollywood, California.

UNIVERSAL CAMERA. Turret. Dissolve, 3 lenses and Tripod, \$150.00. Eyemoss, \$85 up. Ari, 30mm printers, \$75. Steineman 30mm printers, \$35. Akeley, complete outfit, bargain. Leica's, Contax. NEWMAN'S CAMERA EXCHANGE, 1192 6th Ave., New York City.

We have special flat head tripods with trombone legs and quick release clamps for still photographers doing color work requiring super steady tripod. RUBY CAMERA EXCHANGE, 729 Seventh Ave., New York City.

SILENCED Bell & Howell with check pawl shuttle 40, 50, and 75mm F. 2.7 lenses mounted, 2 1000-ft. Magazines, tripod, finder and sunshade. Rebuilt like new. Motion Picture Camera Supply, Inc., 723 Seventh Avenue, New York City; Cable: CINECAMERA.

SILENCED Bell & Howell with new Fearless Movement 40, 50, and 75mm F. 2.7 lenses mounted, 2 1000-ft. Magazines, tripod, finder and sunshade. Perfect condition. Motion Picture Camera Supply, Inc., 723 Seventh Avenue, New York City; Cable: CINECAMERA.

230-Jegree shutter Akeley Camera X134, special focus on film attachment. 2-, 4-, 6-, and 12-inch lenses. Four 200-foot magazines, Akeley tripod, cases. Motion Picture Camera Supply, Inc., 723 Seventh Avenue, New York City; Cable—Cinecamera.

New type Super Parvo DeBrie ultra silent with built-in motor automatic dissolve, pilot pins, anti-buckling device. Four 1000-foot magazines, DeBrie friction tripod, finder, all accessories. Latest type equipment like new. Motion Picture Camera Supply, Inc., 723 Seventh Avenue, New York City; Cable—Cinecamera.

ARTREES latest 1935 portable double sound recording unit with double sprocket recorder, automatic speed control motor, twin fidelity optical unit. Latest type camera motor. New type microphone. Complete factory guaranteed, \$2,400. This is the only authentic ArtReeves equipment for sale in Hollywood outside factory. Camera Supply Co., Ltd., 1515 Cahuenga Blvd., Hollywood, Calif.

People who act as though they knew they were being photographed are fatal to any film. They break the continuity of thought you've developed in your audience. Instead of being interested in the picture, the beholder turns his attention to the triple-distilled idiot in front of the lens. Therefore, if you can't be sure that the people around your lens are going to act reasonably natural in the scene, by all means don't waste film on them.

But in the films where people are really necessary—give them something to do! Nine times out of ten, the reason folks are foolish in front of a movie—camera is because they don't

GENUINE Bell & Howell, 1000-ft. magazines in excellent condition, \$50.00 each. Four hundred foot magazines, \$25.00 each. Four hundred foot Mitchell magazines, \$25.00 each. Cases for above, \$10.00 each. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, Calif. Cable HOCAMEX.

EDUCATIONAL Camera Blimp and Dolly for Mitchell Camera. Follow Focus Device, geared free head, three wheels, pneumatic tires, cost \$1250, special \$500. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, Calif. Cable HOCAMEX.

LIKE NEW—Mitchell Camera, silenced Academy aperture, Pan Tachar lenses, free head tripod, 1000-ft. magazines, complete—\$2000. Hollywood Camera Exchange, 1600 N. Cahuenga Blvd., Hollywood, Calif.

SOUND Moviola Model UC, like new, \$450.00. Moviola Silent Viewing Machine, Model C, with variable speeds, \$125.00. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, California.

Like new ARTREES portable double sound recording outfit, with two microphones, Bell & Howell silenced camera, complete in every detail, a real bargain, price \$350.00. Recorder without camera \$225.00. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, California; Cable—HOCAMEX.

Combination Title Board and Animation Table, with lathe bed and carriage mounted on bench. Operates in vertical or horizontal position. Can be used for optical printing, special \$150.00. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, California.

16mm Films Exchanged, Sold, Bought, Cameras, Projectors, Sound Films. Write me first. ROBERT BLOCK, 1451 Broadway, New York City.

WANTED

AT ONCE, Silenced Mitchell and Standard Bell and Howell cameras, B.H. High Speed movement. Cinemators and accessories. Lighting equipment. Must be in good condition and practical for studio use. Send complete description and lowest price to G.H. c/o American Cinematographer.

16mm Printer similar to ARRI, new or second-hand. State condition and price. A. B. Henwood, P.O. Box 868, Kelllogg, Idaho. 8

Roll Film adapter for Dalmeyer speed camera, 1 1/2"x2 1/4". Box 248, c/o American Cinematographer.

Will pay cash for professional or 16mm camera, projectors, lenses, motors, enlargers. Everything in the photographic line. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, Calif. Hollywood 3621

WILL PAY CASH FOR: Bell & Howell, Mitchell, Akeley or De Brie Cameras, lenses, motors, parts and accessories. Motion Picture Camera Supply, 723 7th Ave., New York, New York.

know what to do with themselves; given something to do—if it is merely walking across the scene—they lose most of their camera-fright, and become more or less human once more.

When people figure in a film-story, closeups are vitally necessary. In the Hawaiian film, for instance, the only way you can tell the story of the poi and raw-fish eating episodes is in close-ups. But untrained actors almost always grow nervous when a camera is brought sufficiently close for a revealing close-up. This is a problem for the telephoto lens: snap a 2"—or even a 3"—into place, and you can make your close-ups from an un-terrifying distance. Try it.

Amateur Movie Contest



The annual American Cinematographer Amateur Movie Contest will close this year on November 30. That is, all entries must be in our office on that date.

As usual the members of the American Society of Cinematographers will act as judges.

There will be four outstanding prizes. None worth less than \$150.00.

THE GRAND PRIZE will be.....\$250 cash
EASTMAN KODAK CO. offers\$150 in Equipment
BELL & HOWELL offers.....\$150 in Equipment
VICTOR ANIMATOGRAPH offers a Model 4 Camera complete
with f 2.9 Focusing Mount, 1" Lens and a No. 1 Carrying Case,
value\$147

It isn't too late to start your picture now if you haven't already done so. It can be in as many reels as you wish, it can be either 16mm or 8mm. Write for more information and Entry Blank.

CONTEST EDITOR
AMERICAN CINEMATOGRAPHER

6331 Hollywood Boulevard

Hollywood, California

London Prefers Mitchells



The Following British Studios Use MITCHELL CAMERAS

- Associated Talking Pictures Ltd.
- British & Dominions Films Ltd.
- British International Pictures Ltd.
- British Lion Films Ltd.
- Gaumont British Picture Corporation
- Gainsborough Pictures Ltd.
- London Films Ltd.
- Joe Rock Studios Ltd.
- Stolls Picture Productions Ltd.
- Warner Bros. Ltd., Teddington
And Others



Mitchell Camera Corporation

665 N. ROBERTSON BOULEVARD
WEST HOLLYWOOD, CALIF.

Cable Address "MITCAMCO"

AGENCIES

CLAUD C. CARTER
Sydney, Australia

MOTION PICTURES
JOHN H. TAYLOR
London, N.W. 1,
England

CAMERA SUPPLY INC., New York City
D. NAGASE & CO., Ltd. BOMBAY RADIO CO.,
Osoko, Japan Ltd.
Bombay, India

Phone OXford 1051

ARMINIO CONTI,
Rome, Italy
